

NetworkWorld

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March 15, 2004 ■ Volume 21, Number 11

Technology INSIDER

WLAN PLANNER

Cost, coverage and capacity are the three variables when figuring out which wireless LAN technology is right for your network. In this Technology Insider, we lay out the case for 802.11a, for 802.11b/g and for a multi-mode approach. **Page 57.**

■ **WiMax and ZigBee:** Put these two up-and-coming wireless technologies on your radar screen. They have the potential to extend wireless connectivity out to mobile users and into wireless mesh networks. **Page 60.**

■ **Best of the Wireless Wizards:** Our wireless gurus answer your Wi-Fi questions. **Page 62.**

■ **Clear Choice Test:** Newbury Networks' Watchdog provides an electronic fence to stop outsiders from sniffing your network. **Page 64.**

■ **Online:** Find an updated Buyer's Guide of wireless products at www.nwfusion.com, **DocFinder: 1130.**

— **PLUS Net.Worker**
Linksys announces a new line of 802.11g gear that significantly boosts WLAN speeds. **Page 41.**

JOHN HERSEY

Microsoft readies pitch on patches

■ BY JOHN FONTANA

Microsoft customers this week are hoping to finally evaluate the company's new patch management tools and hear more about the wide-ranging systems management platform in which those tools will be a key component.

At the company's annual Management Summit, Microsoft is expected to unveil the first beta of Software Update Services (SUS) 2.0, a free Windows server add-on that runs behind a firewall and automates the acquisition and deployment of patches. SUS 2.0, which eventually will be built into Windows, is just one of the new tools Microsoft is developing for its much maligned patch infrastructure.

Over the past few years, an onslaught of worms and viruses has shown that Microsoft's patching

tools are not up to snuff.

The next generation of tools are just a small portion of Microsoft's Dynamic Systems Initiative (DSI),

which is focused on creating a self-managing environment built around applications that can

See Microsoft, page 16

Tester's Challenge: Fix the patch update system



We call on vendors to simplify the process.

■ BY RODNEY THAYER, NETWORK WORLD LAB ALLIANCE

After last summer's Blaster outbreak — which would have been much shorterlived if users patched more Windows machines — there's been considerable debate about why users are slow to apply necessary security patches.

One reason is the time and effort required to determine which machines need patches, test those patches and roll them out across the network. Microsoft is developing new tools that might help automate these processes (see story, above), but there are also more elementary reasons why Johnny can't — or doesn't — patch.

One is that vendors aren't providing clear-cut information about

See Patch, page 10

A Wider Net

IT workers and caffeine: A high-octane affair

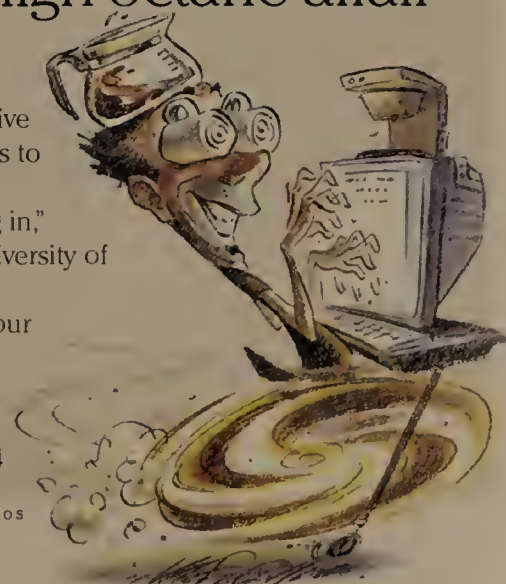
■ BY CARA GARRETSON

Sometimes coffee, soda and ginseng candy just don't give Ben Robinson the boost he needs. That's when he turns to the heavy stuff: caffeinated soap.

"It wakes you up right away, before coffee could be kicking in," says Robinson, a business and technology student at the University of Guelph in Ontario.

"I already knew that a lot of chlorine gets absorbed into your skin when you take a shower, so it seemed reasonable to me that you'd absorb a significant amount of caffeine if you took a long shower and lathered up well," he says.

See Caffeine, page 84



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Mylene Mayers
Technology Manager, *Toyota Motor Sales USA*

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News

- **8** Financial institutions face rising threat in 'Net attacks.
- **8** NetScreen upgrades IDP software.
- **10** IBM picks up supply-chain partner.
- **10** EMC dives into information life-cycle management.
- **12** Extreme Networks unites wired, wireless networks.
- **12** Vendors tackle electronic records retention.
- **14** AT&T teams with Grand Central to offer Web services.
- **14** Mercury, NetIQ expand apps management lines.
- **82** Foundry offers 10G switch for wiring.
- **84** ISPs slap suits on alleged spammers.
- **84** HP to snap up user management firm.

Infrastructure

- **17** Net6 offers twist on remote access.
- **17** Cisco raises security profile.
- **20** Symbol CEO: Challenges ahead.
- **20** HP blade server gets dense.
- **22** Dell, VMware boost server wares.
- **22** Kevin Tolly: WAN router redux.

Enterprise Applications

- **25** IronPort, Proofpoint appliances target spam.
- **25** Web services project protects healthcare provider.
- **28** Flash: More than just glitzy Web sites.
- **31** Scott Bradner: The butterfly as protector (or petty censor?).
- **32** Special Focus: Open source database improvements grow.

Service Providers

- **37** IPass soreads its Wi-Fi wings.
- **37** Hughes pushes satellite broadband standard.
- **38** Johna Till Johnson: Fear not: The telecom industry will bloom yet again.

Net.Worker

- **41** Linksys increases WLAN speeds within 802.11 standard

The tiny SanDisk T-Flash card can be removed from cell phones and upgraded. Page 50.

Technology Update

- **47** Fibre Channel doubles speeds of SANs.
- **47** Steve Blass: Ask Dr. Internet.
- **50** Mark Gibbs: Cascading Style Sheets (5) rollovers!
- **50** Keith Shaw: Cool tools, gizmos and other neat stuff.

Opinions

- **52** Editorial: Adding data center capacity block by block.
- **53** Ken Presti: Wrangling over services revenue.
- **53** Thomas Nolle: A new dimension to an old rivalry.
- **54** Letters: Readers speak out on spam.
- **86** BackSpin: Hooked on the lowest bidder.
- **86** 'Net Buzz: Hey, they stole the whole site.
- **76** Career classifieds.

Management Strategies

- **69** Encryption restrictions: Regulations regarding the import and export of encryption products affect buying decisions worldwide.

NetworkWorld

Features

Technology Insider: WLAN planner: Deploying a wireless LAN requires making tough technology choices. Should you go with an 802.11a network or an 802.11b/g network? Or a multi-mode network? In this Technology Insider we lay out the case for each option. **Page 57.**

WiMax and ZigBee: Two new technologies on the horizon promise to extend wireless connectivity out to mobile users and into wireless mesh LANs. **Page 60.**

Best of the Wireless Wizards: Our Wi-Fi gurus answer your toughest questions. **Page 62.**

Clear Choice Test: Newbury Networks' Watchdog provides an invisible fence to keep out intruders. **Page 64.**

Online: Wireless gear Buyer's Guide at www.nwfusion.com. **DocFinder: 1130.**

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Exclusive

Case studies: Network management

Come online for the first in an exclusive series of stories spotlighting enterprise network managers' innovative use of management products to automate processes, prevent outages and save money. **DocFinder: 1143**

When bloggers sleep

In Layer 8, we pondered the ease of a well-known blogger who says he follows 1,348 other blogs and wondered when he finds the time to sleep. He finds the time to let us know. **DocFinder: 1144**

Interactive

Time to regulate Windows?

Columnist Mark Gibbs oosed the question last week. See how Fusion users respond — and add your comments. **DocFinder: 1145**

Seminars and events

Messaging: From chaos to control

Messaging is in crisis. Ever-escalating e-mail assaults now threaten core competencies of even the most sophisticated corporations. It's time for better, more aggressive answers that again make messaging a corporate-safe application. Industry expert and *Network World* Columnist Mark Gibbs will present the latest demos and new tools. **DocFinder: 9876**

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Columnists

Wireless Wizards

Combatting WLAN interference
The Wizards help out a user who needs to cut down on the amount of interference his wireless net is getting from outside sources. **DocFinder: 1146**

Help Desk

Curbing P2P apps
Columnist Ron Nutter discusses ways to block or limit the bandwidth that file-sharing applications use. **DocFinder: 1147**

Telework Beat

GSA's telework update
Net.Worker Managing Editor Toni Kistner interviews the head of the General Services Administration's telework efforts to see where the government stands on teleworking. **DocFinder: 1148**

Small Business Tech

Fighting spam the Wright way
Columnist James Gaskin talks to Roger Wright, a systems administrator at a Florida bank, on how he is fighting spam. **DocFinder: 1149**

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New

Bits

Microsoft greased skids for SCO

■ Microsoft executives introduced The SCO Group to an investment fund that provided the company with a \$50 million investment last October, a spokesman for the fund confirmed last week. Microsoft executives talking to BayStar Capital suggested the investor should look into SCO as an investment opportunity, said Bob McGrath, a BayStar spokesman. "BayStar was introduced to SCO by executives at Microsoft," McGrath said. "We talk to individuals all the time about investment." SCO says the Linux operating system contains code that violates its intellectual property rights, and it has launched lawsuits against IBM and Novell in connection with those claims. Microsoft, whose Windows operating system monopoly is threatened by Linux, has paid SCO in the past. A 2003 Unix licensing deal between the two companies earned SCO \$16.6 million last year, according to Securities and Exchange Commission filings. The software giant's role in the BayStar financing, however, had been unknown until recently.

Wireless top-level domain proposed

■ Nine leading network vendors have proposed a new registry that would sell domain names for wireless devices. This proposal is one of several new domain name extensions that the Internet Corporation for Assigned Names and Numbers is expected to receive by March 16, the deadline for submitting proposals for new specialized top-level domains. Nokia, Microsoft and Vodafone lead the wireless industry group, and it has the backing of HP, Samsung, Sun and others. The group hopes to create a top-level domain that would be available only to companies that offer Web pages or other Internet services designed for use with wireless devices. For several years, Nokia has been pushing the idea of a dedicated top-level domain for the wireless industry. In 2000, Nokia submitted a proposal to ICANN for a new top-level domain and offered eight possible extensions, including .mobile and .mobi. ICANN rejected Nokia's original proposal, saying that it lacked a strong marketing plan.

Palmisano's pay pegged at almost \$7M

■ Sam Palmisano was paid a \$5.4 million bonus for leading IBM in 2003, making his total compensation for the year \$6.95 million, the company said in a regulatory filing last week. IBM's chairman and CEO was awarded the compensation for navigating the company through "several challenges" and increasing its share in the server and small and midsize business markets, according to documents filed with the Securities and Exchange Commission. Palmisano's 2003 pay was more than \$1 million greater than what he earned in 2002, when he was awarded a salary of \$1.43 million and a bonus of \$4.5 million.

COMPENDIUM

The real support-forum losers

Sure, newbies can ask dumb questions sometimes, but why do some people seem to delight in hanging out in support forums to insult them? Did they pull the wings off flies as kids? Discuss at www.nwfusion.com, DocFinder: 1134.

■ TheGoodTheBadTheUgly



In the money. The telecom market has taken more than its fair share of lumps in recent years, but the last few weeks have been rather kind to it in terms of new funding. A sampling: Optical network equipment maker Xtera scored \$30 million, broadband wireless box vendor Aperto garnered \$20 million, and security services device supplier Quarry Technologies added \$18 million to its coffers.



What a waste. What's the environmental impact of a little old PC? According to a United Nations University study issued last week, about 1.8 tons of raw material (including water, fossil fuel and chemicals) are required to manufacture the average desktop PC and monitor. One of the study's conclusions: Users and vendors can do more to save energy by extending the lives of PCs than by recycling them.



Spam suit nails Bob Vila site.

Home improvement Web site BobVila.com might need a little fixing up in light of a lawsuit filed earlier this month alleging the operator and promoter of the site are guilty of violating the federal CAN-SPAM Act. ISP Hypertouch says the site sent unsolicited e-mail promoting a newsletter — a charge that the site's marketing company denies. ➤



Intel balks at Chinese WLAN rule

■ Intel last week said it won't meet the June 1 deadline that China has imposed to require all wireless LAN equipment with encryption that's sold in China to make use of a Chinese government-developed encryption standard known as WAPI. WAPI (see related story, page 69) is a secret encryption scheme developed by the Chinese government that will only be made available to a handpicked number of Chinese manufacturers for license to other companies. The Chinese government's approach to WAPI and WLANs has rankled U.S. manufacturers, who would be forced into close co-production relationships with Chinese competitors. Intel said its decision not to support WAPI in its products by the June 1 deadline means it could be forced to stop selling some computer chips in China.

Nortel to delay 2003 financials

■ Nortel last week said it would delay filing its 2003 annual report with the Securities and Exchange Commission as it continues an internal review begun in October. Nortel's audit is currently re-examining the "establishment, timing of, support for and release to income" of certain accruals and provisions in prior periods. The company said it believes it will need to revise its previously announced unaudited results for the full year and results in some of its quarterly reports for 2003. The company also said it would restate its previously filed financial results for one or more earlier periods.

Study puts privacy costs in millions

■ A study from Ponemon Institute, a Tucson, Ariz., think tank that focuses on how businesses establish privacy policies and execute them, last week released the results of a survey with 44 U.S.-based multi-national companies. "The Cost of Privacy Study," underwritten by IBM, shows that companies spend between \$500,000 and \$22 million each year on their privacy initiatives, with an average of about \$5 million. According to the report, technology companies incur the highest privacy costs, and transportation and hospitality the least. The report states that direct and indirect spending by these large corporations over the next year will total about \$2.7 billion.

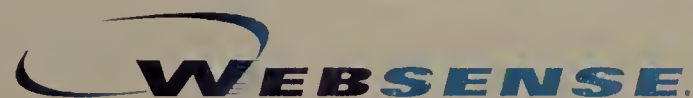


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Craftier Web threats hit finance firms

■ BY ELLEN MESSMER

The last six months of 2003 saw a fivefold increase in worms and other types of malicious code that attempt to steal personal data from Internet users, according to Symantec's semiannual Internet Security Threat Report.

Companies that process online financial transactions — banks, brokerages and eBay with its PayPal payment service — are targets of these attacks more than any other type of industry, the report notes.

The top troublemaker, a worm-Trojan-back-door threat named Bugbear.B, "would steal anything from anybody," says Alfred Huger, senior director of engineering at Symantec Security Response. Bugbear.B specifically looks to see if a host computer has information about financial data or if there's a bank domain name.

"Bugbear.B can also deliver logged keystrokes to a third party, compromising important information such as passwords and decryption keys," the report says. "The creator of this threat appears to have targeted financial institutions in an attempt to export financial data or gain future access to accounts."

The Symantec report compiles a range of data about computer viruses and software vulnerabilities, and the number of attacks recorded by 20,000 multi-vendor sensors that are maintained by companies all over the world.

In the first half of last year, only one-sixth of these companies reported a serious security breach, but from July through December, half reported a breach from worm attacks such as Blaster, the report says.

Financial institutions agree that they are under siege on the Internet.

Westpac Banking of Australia last week was hit by a so-called phishing scam that used fake e-mail that seemed come from Westpac to trick customers into giving the attacker passwords to bank accounts. In most phishing scams, the attacker sets up a fake Web site with a home page that mimics the victim's home page.

In last week's scam against Westpac, the attacker carried out the plan through a re-direction scheme that involved opening a fake version of the Westpac Web site and opening the real Westpac Web site in a second

browser window.

"They linked to a genuine Web site, ours, except for the crucial part where you put in a password," says Paul Gregory, a Westpac spokesman. About a half-dozen Westpac customers fell victim to the scam before Westpac discovered it, he says, adding this wasn't the first phishing scam to hit Westpac or other Australian banks.

"It's pretty common," he said.

In fact, there has been a steady rise in bank-targeted phishing scams, with Citibank, eBay's PayPal service, Wachovia, Bank of America, Wells Fargo and several others advising of problems in public announcements. Citibank's Web site has warned its customers of 18 phishing scams since December, with details about the fake e-mail and Web site links of each one. Some security consultants say the latest scam against Westpac stands out as particularly devious.

"These people were forcing you to a valid Web site," says Mike Hrabik, CTO at Solutionary, a managed security services firm in Omaha, Neb. One way this can be done is through various techniques that fall under an attack called cross-site scripting. Most of them involve the attacker crafting a link with cookie-stealing code to interact with the victim's browsing session.

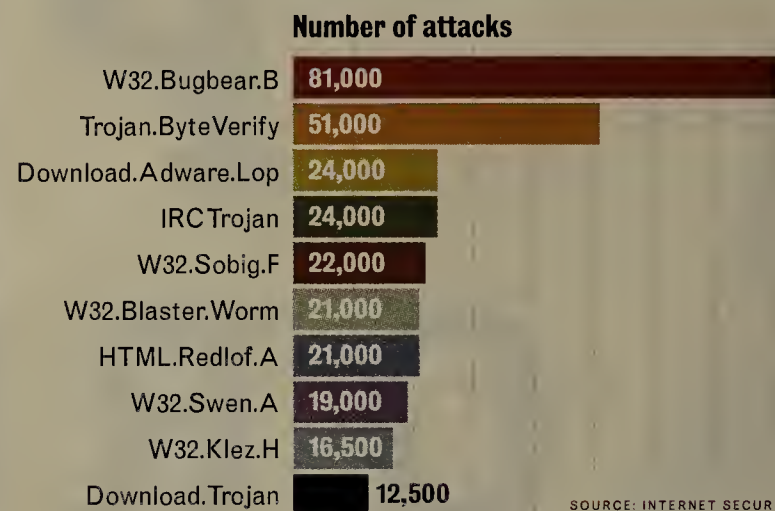
In spite of the growing problem, few security vendors have anti-phishing products, though some application firewalls, such as those from Teros and Sanctum, purportedly block cross-site scripting. Use of authentication methods stronger than simple passwords, such as public-key infrastructure (PKI) certificates or handheld tokens that generate one-time passwords, would make phishing much harder.

Few financial firms or e-commerce companies (Bank of Nova Scotia is one exception) make this kind of technology available to their mass-market customers. But some require PKI certificates and dynamic passwords in high-dollar investment and trading arrangements. Westpac says it is aware of these alternatives but is evaluating the economic cost of them.

Hrabik says companies should continually "sweep the Internet" to look for fake Web sites. He said it's often just a matter of doing extensive Web searches. ■

Top 10 attacks

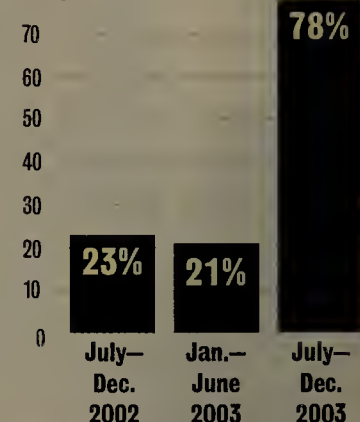
As reported to Symantec from July to December 2003.



SOURCE: INTERNET SECURITY THREAT REPORT, SYMANTEC

Worms that steal

Percentage of worms, viruses and blended threats that are designed to grab personal information.



NetScreen update expands reach of intrusion detection

■ BY TIM GREENE

NetScreen Technologies is upgrading its intrusion-detection software so it also gathers and parses data about network traffic to reduce false intrusion alarms and pin down sources of network attacks.

The upgrade, called Enterprise Security Profiler (ESP), is part of a new release of the software that runs on NetScreen's Intrusion Detection and Prevention hardware, called IDP Version 3.0.



NetScreen's new IDP 1000 hardware supports software to reduce false intrusion alarms.

NetScreen IDP devices are placed between networks and key assets, typically servers, to shield them from intrusions. The addition of traffic gathering and analysis will help the gear determine whether suspicious traffic is threatening or legitimate for any given network, says Charles Kolodgy, an analyst with IDC.

For instance, a burst of requests to a server from one IP address might be normal in a given network, but an intrusion-prevention device could interpret it as a denial-of-service (DoS) attack and shut it down. "False positives are the bane of intrusion prevention," Kolodgy says. "You don't want to have your prevention system taking down legitimate activity."

NetScreen IDP boxes can only see traffic that flows through them on the way to key network resources, so they have blind spots in their view of overall network traffic, NetScreen acknowledges. This means malicious traffic not passing through would go undetected, so customers should take supplemental steps

if they want full network coverage.

ESP parallels the efforts of Sourcefire, whose RNA product also gathers network traffic information for administrators to analyze. Sourcefire's goal is for data that RNA collects to be shared directly with intrusion-detection and -prevention platforms, Kolodgy says. By contrast, NetScreen is for the first time rolling the gathering and intrusion-prevention features together in one platform.

The data ESP gathers includes network and application analysis. So it would track traffic by source IP address but also by application session initiated from that address.

With IDP 3.0, users are alerted to all threats in a compound attack. With earlier versions, an attack might generate only a DoS alert, even though the attack also included an attempt to take root control of a server. With Version 3.0, all components of attacks are reported.

NetScreen has teamed with TruSecure to provide its Intellishield Alert Manager software, which supplies information that identifies machines vulnerable to the attack and where to find patches to defend against them.

ESP data tracking and storage can be used to log and analyze normal traffic flows on a network, valuable data that network executives often lack the tools to monitor, NetScreen says. It can send alarms when new servers are added to a network, for example, to track potentially rogue use of the network. It also can monitor the network to make sure banned applications such as Kazaa trigger alerts.

NetScreen also is announcing a new IDP hardware device called NetScreen IDP 1000. It has all the features of other NetScreen IDP devices, but has gigabit throughput, making it the fastest of the four IDP models. It costs \$50,000.

IDP 3.0 is available as a free upgrade for customers with service contracts. ■



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EMC gets ready to show softer side

BY DENI CONNOR

What could drive a traditional hardware company like EMC to spend roughly \$3.6 billion on three big software companies over the past nine months? Consider an IT customer like CareGroup Healthcare System in Boston, which uses EMC systems to store data on 9 million patients across six hospital sites.

"We'd like to put everything on the highest-end EMC Symmetrix, but frankly we can't afford to keep 70T bytes on that particular system," says CareGroup's CIO John Halamka, referring to EMC's flagship array, which starts at \$400,000.

To more cost-efficiently distribute its data, CareGroup has bought into the concept of information life-cycle management (ILM), a software-driven approach to organizing and storing the vast amounts of data created within

companies based on the data's value. CareGroup uses Symmetrix for "need it now" data, EMC's Clariion gear for less frequently used data and EMC's Centera for data that must be kept but is rarely accessed.

EMC has also bought into ILM and in a big way, as its buy-outs of Legato Systems for \$1.3 billion in July, Documentum for \$1.7 billion in October and VMware for \$635 million in December illustrate.

"These acquisitions were central to EMC's goal of being known as the ultimate life-cycle management company," says Howard Elias, executive vice president of corporate marketing and new ventures for EMC.

The deals also let EMC shift more of its revenue to high-profit-margin software, a key strategy for the company given the tight squeeze on hardware margins (see related story, page 82).

EMC's challenge this year is to

digest its acquisitions from a product and a business standpoint.

ILM strategy

From EMC's perspective, the basic tenet of ILM is to provide tools and services companies need to maximize the value of their information while reducing costs at every point along the way, Elias says. That means understanding every piece of information and its importance within a company and then placing it on appropriate storage, rather than simply throwing data on disk drives.

Gaining this additional intelligence is where the software acquisitions come in, EMC executives say.

David Goulden, executive vice president of customer solutions, marketing and new business development at EMC, cites six levels of ILM, starting at tiered storage at the bottom and finishing with integration and management services at the top.

The first is tiered storage, which makes the best economical and business use of all EMC's hardware products: the high-end Symmetrix, less-expensive Clariion and least-expensive Centera storage arrays.

The next level involves protecting, managing and migrating data dynamically, Goulden says. This is where Legato's software comes in for EMC.

Legato's NetWorker data protection and recovery software, and

NetWorker PowerSnap and Repli-Stor enable rapid recovery, Goulden says. EMC plans to integrate its mainframe protection product, EMC Data Manager, with NetWorker longer term.

The third and fourth levels of ILM are intertwined, according to Goulden. They are the ability to implement policies that can classify data and applications based on business rules; followed by the ability to manage structured

See EMC, page 82

IBM buys supply-chain partner

BY ANN BEDNARZ

IBM has plans to expand its portfolio of WebSphere integration middleware with data synchronization software from Trigo

Technologies.

Big Blue last week announced plans to buy its partner of nearly three years, Trigo, for an undisclosed amount in a stock transaction slated to close next quarter. Privately held Trigo's expertise is in streamlining collaboration among supply-chain partners. Its Product Center software links product-related information such as style, size and color, with transaction terms such as pricing, and then publishes this information to internal enterprise applications and external business-partner systems.

The majority of Trigo's success has been with retail and consumer packaged goods companies, which struggle to keep track of hundreds of attributes, for thousands of products, across dozens of applications. Trigo user Albertsons, in Boise, Idaho, depends on Product Center to manage 1 million items, from about 5,000 suppliers, for its 2,300 grocery and drug stores, said Tom Reilly, CEO of Trigo, in a conference call detailing the IBM buyout.

The pending acquisition highlights the growing importance of data integrity in business-to-business transactions. Administrative and paperwork errors are responsible for 13% of the \$46 billion retailers could lose annually to inventory inefficiencies and theft, according to research from Ernst & Young.

The Trigo purchase will help round out IBM's own data integration offerings and provide ammunition in its ongoing effort to assemble industry-specific middleware offerings. ■

Patch

continued from page 1

when, why and how to adopt security updates. Both commercial and open source software vendors make it difficult to track what security updates apply to our machines.

When Microsoft announced numerous security updates in October, its announcement was unclear at best and downright confusing at worst. Microsoft's Web site, depending on what page you looked at, gave you different versions of what patches were available. Adding to the confusion were separate and irregularly cross-referenced notices. The Windows summary for last October covers MS03-041 through MS03-045. There is no mention of how to find announcements about other Microsoft products, and therefore it totally misses the Exchange announcements, which were labeled MS03-046 and MS03-047 (note these are labeled from the same naming system, adding further to the confusion).

There is no single, definitive place to look on the Microsoft Web site for patch information.

Not only does Microsoft make it hard to find the right information, but the information can change overnight. Just last week, when Redmond rolled out its security patches for the month of March, it announced three patches for various products on Tuesday and had to turn around and revise both the sever-

ity rating and the client update package less than 24 hours later.

This patch confusion issue is not unique to Microsoft or to commercial vendors in general for that matter.

Open source projects are not exempt from this charge; take the slew of OpenSSH updates issued last fall, for example. The OpenSSH team released three updates in two days (3.6.1p1, 3.7.1p1 and 3.7.1p2) before they finally got one of the known vulnerabilities corrected.

You can subscribe to vendor announcement services, monitor SANS Web sites and hang out on security mailing lists, but these are not reasonable ways to learn about security

updates. Why should we have to rely on the kindness of strangers to learn what patches we need to apply?

The challenge

As Dr. Tina Bird, computer security officer at Stanford University, has suggested in her SANS lectures, users should have a standardized means by which they can go to any vendor's Web site and identify any security updates that are issued.

As the major operating system vendors, we throw our Tester's Challenge gauntlet at the feet of Apple, Microsoft, Novell and Red Hat. We challenge you to create an effective, simplified means by which we can get our hands

The charge:

Security update information is weak and disjointed.

The prime offender:

**Microsoft
Secondary Offenders:
Apple, Novell, Red Hat**

The challenge:

Create a single point of security update information.

The debate:

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Extreme unites wired, wireless nets

■ BY JOHN COX

Extreme Networks this week plans to roll out a blade that ties wireless LAN access points into the company's Alpine 3800 wiring closet switches.

The 32-port module, with Power over Ethernet (PoE), fits into Extreme's unified access strategy, which involves letting the existing network infrastructure support a range of clients. New code, added to the Alpine's management module, is the basis for authenticating wireless users, and securing and managing the access points.

Also new:

- Code changes so the switch can use a device's media access control address to authenticate with RADIUS servers.
- Use of Secure Sockets Layer to encrypt the network logon.
- RF Manager, a rebranded third-party application for designing and managing the WLAN radio environment; modified to work with the Alpine switch and Extreme's EPICenter network management system.

Extreme is the first vendor to introduce this WLAN approach in wireline switches, although Cisco and Foundry Networks

have said they'll do the same. By contrast, WLAN switches from companies such as Airespace are dedicated boxes that create, in effect, a WLAN that's separate from the wired infrastructure.

Last September, Extreme began shipping the Summit 300-48, an edge switch that could handle wireless and wired applications, with its companion thin access point, the Altitude 300.

The software developed for the Summit has been incorporated into the system and management software for the Alpine. The switch powers eight of the 32 10/100 Base-T ports in the new WLAN module. A separate power supply unit has to be added for the remaining 24 ports.

The San Francisco Museum of Modern Art has adopted the unified access approach through its use of Extreme's high-end Black Diamond and Summit switches. The museum deployed 15 Summit 300 switches last year and created a WLAN covering the public areas of the downtown site with 20 Altitude access points.

"Unified access is the way wireless integrates into your switches, with the wireless 'smarts' built into the switch," says Leo

Ballate, IT director for the museum. "You have one central interface, and you can manage the access points, the [Summit] switches and the Black Diamond."

Using Extreme's EPICenter management system, Ballate's seven-person department

can administer the entire network.

The new Alpine 3800 802.3af PoE module is expected to ship next month, and costs about \$3,000. A basic version of the RF Manager software costs about \$5,000, and the advanced version nearly \$14,000. ■

WLAN virtual showdown

Log on March 29 to participate in an online debate featuring six vendors.

We've challenged Airespace, Aruba, Cisco, Extreme, Symbol and Trapeze to duke it out in a weeklong online debate, discussing everything from why they matter to technical product differences. On March 29, we'll post the first round of vendor answers to questions from *Network World* Senior Editor John Cox and Craig Mathias, principal of the Farpoint Group. Tuesday and Wednesday the vendors will get the chance to question each other, and Thursday and Friday we throw the doors open for questions from you. So log on to www.nwfusion.com and follow what is shaping up to be a lively debate.

Vendors tackle electronic records retention

■ BY ANN BEDNARZ

Bank of America's securities unit last week agreed to pay a record \$10 million penalty to the Securities and Exchange Commission for record-keeping violations and failing to produce documents — in particular, e-mails — requested as part of an SEC investigation.

The fine is the largest imposed for a violation of this type, the SEC says. But it's not the first. In 2002, five Wall Street brokerages each accepted a \$1.65 million fine for improperly storing e-mails.

Despite a string of corporate governance scandals related to archiving electronic documents, U.S. companies still aren't vigilant about handling such communications. Many have no policies in place for retaining and destroying e-mail, instant messages and other electronic content, according to a pair of professional organizations.

The Association for Information and Image Management (AIIM) and the Association of Records Managers and Administrators (ARMA) last week unveiled the results of a survey of 2,200 records managers. Among respondents, 47% say their company doesn't include electronic

An ongoing job

Keeping electronic archives accessible requires migrating old records to new storage platforms as technologies age. Yet,

70% of companies do not have a records migration plan.

SOURCE: AIIM AND ARMA

records in its retention and destruction schedules, and 59% don't have a formal e-mail retention policy.

While certified records managers typically handle paper documents, the job of overseeing electronic records falls to the IT department, according to 71% of the survey's respondents.

Eager to help with corporate record-keeping practices are software and services vendors — many of which unveiled new wares at AIIM's enterprise content-management conference held last week in New York.

Open Text, for example, announced plans to add instant-messaging capabilities to its Livelink collaboration and content management software suite. The company's new Livelink Instant Messenger, due this week, provides tools for creating secure, auditable instant messages. It supports common IM functions, such as displaying which colleagues are online and letting users personalize contact lists. Livelink IM gives users the option of retaining IM content, which the software then indexes to allow for subsequent searches and retrieval.

Meanwhile, Iron Mountain debuted Enterprise E-Mail Management, adding to its portfolio of outsourced records and information management services. The new service adds tools to address e-mail compliance requirements. For example, users can classify mail items for retention purposes, the vendor says. Under the covers, Legato's EmailXtender technology analyzes, captures and forwards specific mail-server content to Iron Mountain's Web-based Digital Archive service, which indexes and stores the content.

FileNet unveiled Web-based software that combines collaboration, business process-manage-

ment and content management capabilities. Team Collaboration Manager provides tools for running discussion forums, Web meetings and interactive polls, and it captures content according to corporate practices for regulatory compliance. The software, which is scheduled to ship in the third quarter, is integrated with other modules in FileNet's P8 suite, including Web Content Manager for publishing content to corporate Web sites, and Records Manager for managing project content in accordance with corporate governance and regulatory compliance mandates.

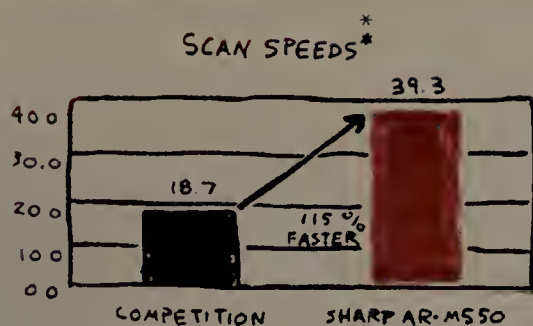
EMC division Documentum also unveiled compliance products that are aimed at helping companies address regulatory and business requirements across content life cycle.

Documentum launched Compliance Manager, a new Web-based application that lets companies create, store, share, revise, approve and distribute information within an audited environment. With Compliance Manager, companies can develop and monitor content-related processes in accordance with regulatory requirements and industry standards, the vendor says. For example, the product supports compli-

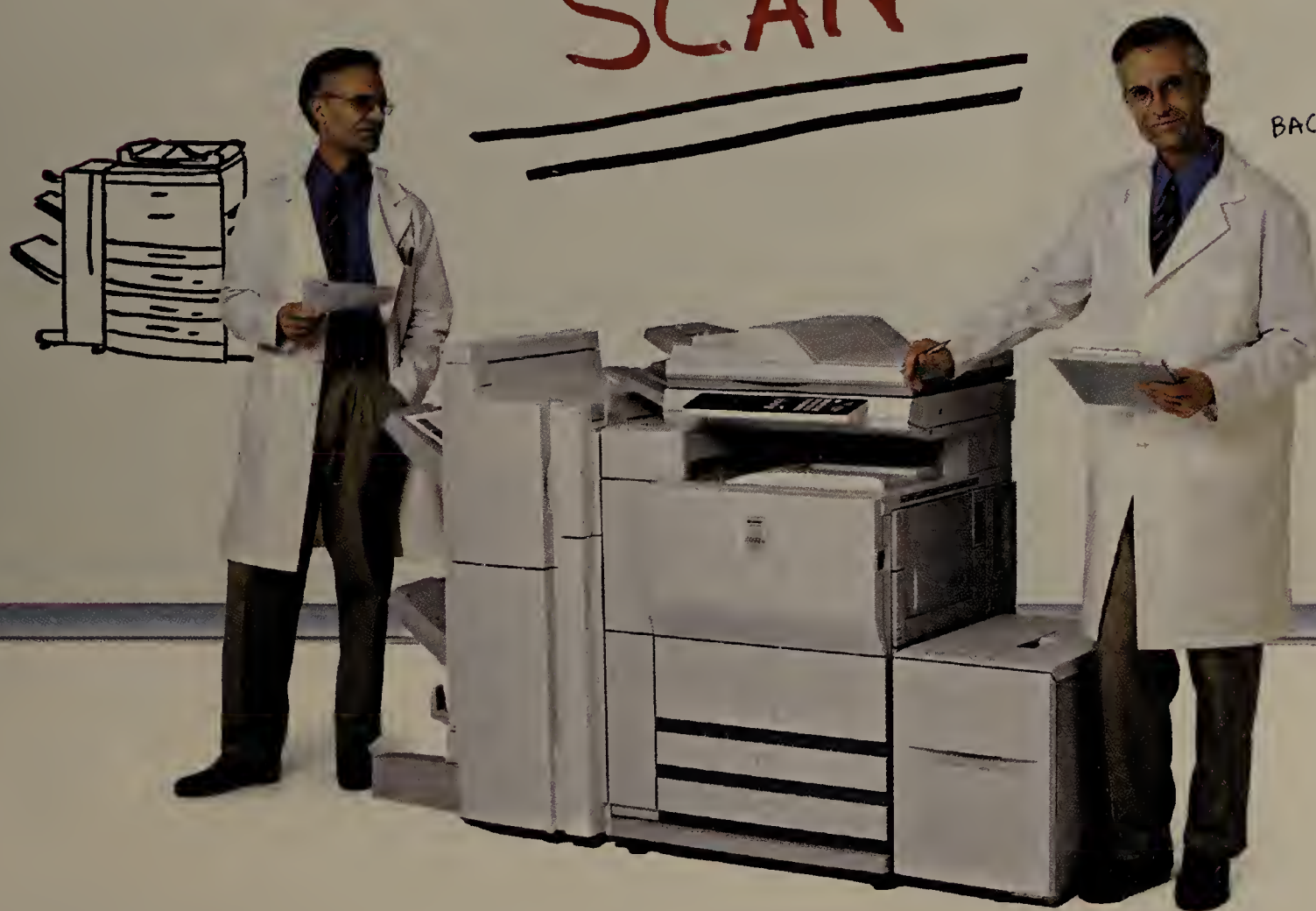
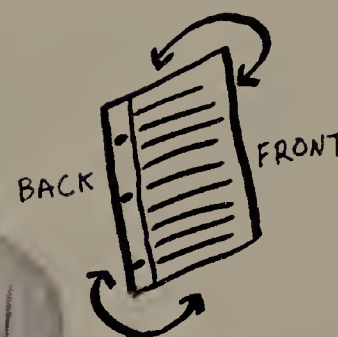
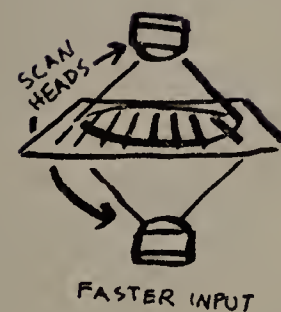
ance with the Food and Drug Administration's requirements for electronic records and signatures, as well as SEC and Environmental Protection Agency regulations.

Also Adobe Systems previewed new forms-processing technology that can handle electronic and paper form submissions. The key to the new technology — which is part of Adobe's Intelligent Document Platform — is a bar code that Adobe says can eliminate the need for manual data entry. It's designed for companies that deal with a high volume of paper forms such as tax returns, account applications and change-of-address requests, Adobe says.

With the new tools, a company can create a bar-code-enabled Adobe PDF form to be distributed via the Web, e-mail or CD-ROM. As the customer fills in the form, the bar code captures data being input. Even if the customer opts to print the form and then mail or fax it back, the bar code retains an electronic version of the form data. Upon receipt, the company can scan the bar code to capture the form data and deliver it to a back-end system for processing. The bar-code-enabled forms software is expected to be available by year-end. ■



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AT&T teams up to offer Web services

■ BY DENISE PAPPALARDO

AT&T is rolling out its first Web services offering, which the company says will let IP users better integrate applications internally, and more easily support customer and other third-party access to specific applications.

AT&T is teaming with application integration company Grand Central Communications to support AT&T WebService Connect.

No Web services company other than Grand Central "brings together the same multiprotocol and multi-version [software] support and orchestration," says Bob Lamoureux, chief architect at Thomson Financial, an operating unit of The Thomson Corp. in Stamford, Conn. "We have a good relationship with [AT&T], and Grand Central had the platform but not the network footprint." Coupling the services made all the difference, he says.

Lamoureux says Thomson is organizing its Web services applications and expects to have them up and running over the WebService Connect network in the next few months.

The service lets customers better integrate islands of applications deployed throughout a company. For example, a company can set up a Web services

process whereby its Siebel Systems and PeopleSoft applications automatically share information.

The service also lets users open applications, such as supply-chain management tools, to partners or customers who then can check inventory easily. Customers specify how users outside their company can access and view specific applications.

Grand Central provides the platform, which is essentially middleware, in a data center hosted at a West Coast location the company declined to divulge. The platform is based on open Web services standards such as Simple Object Access Protocol, and more traditional Internet standards such as FTP and Electronic Data Interchange Internet Integration (EDI-INT). The Web services gateways, deployed at Grand Central's facilities, also let customers exchange application data using HTTP and Simple Mail Transfer Protocol (SMTP).

Thomson's Lamoureux says he likes that Grand Central supports not only Web services standards but also HTTP and SMTP, which lets customers that haven't deployed the latest Web services protocols access Thomson's applications.

Grand Central has multiple high-bandwidth IP connections



“[No Web services company other than Grand Central] brings together the same multiprotocol and multi-version [software] support and orchestration.”

Bob Lamoureux

Chief architect, Thomson Financial

coming into its data center, but AT&T WebService Connect users will only access the data center over dedicated AT&T IP lines, says Halsey Minor, CEO and founder of Grand Central.

This is the first time Grand Central is teaming with a carrier. While the deal is not exclusive, Minor says, the company has no plans to court another domestic long-haul provider.

The deal between AT&T and Grand Central "could accelerate the adoption of Web services," says Sophie Mayo, an analyst at IDC, adding that Grand Central has a good business model but doesn't have a significant client base. The deal with AT&T exposes the offering to a huge salesforce and client base.

While AT&T essentially is sell-

ing Grand Central's service, it is planning further integration, says Eric Shepcaro, vice president of application networking at AT&T.

"In the third and fourth quarters we'll be integrating the service into our [Integrated Global Enterprise Management System] and into all of our service processes and back-end systems," Shepcaro says.

Later this year, the offering will be more visible through standard AT&T tools and systems such as IGEMS. "We want it to look like any other AT&T managed service offering," he says.

While AT&T would not provide specific pricing, Shepcaro says users will be charged based on the amount of traffic that's processed per month at Grand Central's data center. ■

Mercury, NetIQ expand apps mgmt. lines

■ BY DENISE DUBIE

Mercury Interactive and NetIQ are separately introducing software they say will help companies automate more of the application management process.

Mercury, known best for its pre-production application-testing tools, has packed its new Resolution Center suite with programs for real-time application performance monitoring. The software includes tools for troubleshooting problems, finding the root cause of application errors and automating corrective actions.

The suite, which runs on a centralized server, uses industry standard APIs to pull application performance data such as response time from servers and other systems that support applications. Mercury also has forged partnerships with vendors such as BEA Systems and Siebel Systems to develop custom APIs for their software. Using the collected data, Mercury says its software can correlate performance data to pre-defined service levels.

Resolution Center features pre-defined "run books" of problem fixes for popular applica-

tions such as those from PeopleSoft and SAP. Run books also can be customized so that senior-level application and network administrators can put their own processes for fixing applications into the hands of lower-level staffers.

Currently in beta, Resolution Center is scheduled to be available in the third quarter. Pricing starts at about \$300,000 depending on the applications managed and how the network is configured.

For its part, NetIQ upgraded its AppManager package to include more automated scripts and introduced a new management console called Control Center 1.0 that can be used to show how systems performance relates to application uptime.

A new knowledgebase in AppManager will include 2,000 pre-written scripts and monitoring policies, which can be used out of the box or customized.

"NetIQ is extending the visibility of their systems management products up to the application layer and giving more granular details and coverage across more applications," says Stephen Elliot, a senior analyst in IDC's net-

work and service management program.

The core AppManager technology runs on Windows, while Unix and Linux boxes are monitored through agents. NetIQ monitors many components in the application infrastructure, including Web servers, application servers, load balancers and e-mail systems.

Scheduled for general availability in six to nine months, AppManager 6.0 costs \$2,500 for the operator console, \$600 for base Windows agents and \$750 for base Unix agents. Control Center 1.0 is included with the AppManager 6.0 Operator Console. ■



Case studies

In a series of online-only stories this week, read about how Ace Hardware, Time Warner Cable, Staples and others are tackling mainframe, security, configuration and other network/system management issues. **DocFinder: 1133**

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**FOUNDRY
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The Power of Performance

Microsoft

continued from page 1

communicate their management needs to the network. DSI was announced at last year's conference in response to similar utility computing plans from HP, IBM and Sun. While DSI is still in the conceptual stage, Microsoft can wait no longer to improve the patch tools that are part of the plan.

"I am keeping my fingers crossed that they put out better tools for free that help me manage the patching of their products, including Office," says Dave Neige, LAN administrator for Dots Fashions, a chain of clothing stores based in Solon, Ohio. Neige runs SUS 1.0, a tool he says lacks intelligence because of a shortage of management controls.

"SUS provides no history and no auditing. If I had to pay for it I wouldn't like it," says Neige, who adds that budget constraints prevent him from deploying a patch management platform from another vendor such as BigFix, ConfigureSoft or Shavlik Technologies.

SUS 2.0 is designed to correct some of the flaws Neige points out. It also is the first of a handful of patch tools Microsoft has promised, including Microsoft Installer

Call the manager

At its Management Summit this week, Microsoft hopes to detail products within its Dynamic Systems Initiative, a plan to create a comprehensive management platform that includes a number of forthcoming improvements to the company's patch management tools.

Products	Description	Availability
Software Update Services 2.0	Free software that downloads and deploys patches for Windows and other server applications.	Microsoft expected to preview beta at this week's Management Summit.
Microsoft Installer (MSI) 3.0	One of two installers that will replace the eight Microsoft now has for installing patches.	MSI 3.0 is expected to ship with Windows XP Service Pack 2.
Microsoft Operations Manager (MOM) 2004	Event and performance-monitoring tool.	Expected to ship the first half of 2004.
System Management Server (SMS) 2003	Software management and distribution tool.	Shipped Jan. 20; garnering positive reviews.
System Center	Combination of MOM and SMS for managing desktops, laptops, PDAs, applications and servers.	Expected to ship in the second half of 2004.

(MSI) 3.0, a one-stop Web site that would offer patch installer technology; all Microsoft patches; a common assessment and reporting engine to verify whether patches are needed and installed correctly; and the reduction in patch size to conserve bandwidth during deployment.

Last year, Microsoft's chief security strategist Scott Charney created a 30-member

internal task force to identify those needs and consolidate them into a standardized architecture to stretch across all Microsoft products. Today, the company has a hodgepodge of patch tools that individual product groups developed.

Microsoft CEO Steve Ballmer said last October that the fruits of Charney's effort would be seen in May 2004 "with one patching experience . . . that works across Windows and all of the application products."

So far, little has been made available. The beta for SUS 2.0 has been delayed twice. The second beta of MSI 3.0 was released in January, and the final version is expected to ship with Windows XP Service Pack 2 later this year.

Microsoft consolidated its patch releases onto a monthly schedule and upgraded certain tools, such as the Microsoft Baseline Security Analyzer (MBSA), a scanning engine that shipped in January.

Users say they hope to see a new road map this week, but some are forging ahead without Microsoft.

"We don't use SUS because we developed our own tools that basically allow us to patch machines on boot up," says Wally Beck, security manager for desktop and servers at Gainesville University in Georgia. "Microsoft is making progress but they need to have some auditing features to make sure things are installed correctly."

Microsoft says the software is expected to add support for Office, SQL Server and Exchange patches, as well as simple reporting capabilities, support for the uninstall feature contained in some patches and additional administrative controls.

"We are unsure just how good 2.0 may be," says Mark Shavlik, president of Shavlik, which licenses patch technology to Microsoft for use in HFNetChk and MBSA. "Testers who saw early [SUS] code late last year said it wasn't ready. The feedback was it was too manual."

Another question is the overlap with System Management Server (SMS) 2003, released just two months ago, which also has patching capabilities.

"I don't understand the purpose in creating new technology to do a task that

is addressed by SMS," says Peter Pawlak, an analyst with Directions on Microsoft, an independent research firm. "They should make two versions [of SMS], one a basic version."

SMS and SUS differ in many ways, with SMS capable of deploying software other than patches and working in a distributed fashion. SUS is free; SMS is licensed.

Microsoft has promised it will use this week's show to explain how the two technologies, which are built on different architectures, complement one another.

Along with that explanation, Microsoft also is scheduled to give previews of MSI 3.0. The installer technology for server and other applications dictates the way patches install and report problems. Operating system patches are installed using a technology called Update.exe. While MSI 3.0 will help solve the tangle of eight installer technologies Microsoft has today, the key will be adding support in existing products.

"I hope to hear that the installer technology will give me more control [over installing/verifying patches]," says Brad Carpenter, senior systems analyst with Lane Country in Eugene, Ore. Carpenter has shunned Microsoft's tools, relying instead on LANDesk's Management Suite 8 patch management tools because they provide a more holistic approach to patching.

In addition, users say they hope to hear when Microsoft will fulfill its promise to deliver one Web site where they can download any Microsoft patch for any product. The company has been adding Exchange and SQL Server patches to the existing Windows Update site, which previously had been only for Windows patches.

Despite all the promised technology gains, end users and experts say a key factor toward the success of improving patching lies in the consistency of the data that the new technologies provide. Users have complained for years that results returned by different Microsoft tools don't always match, leaving users

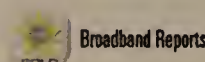
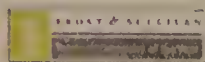
uncertain if patches are correctly installed or installed at all. ■

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Short Takes

■ **Enterasys Networks** this week released its Dragon Remote Site, an intrusion-detection appliance for remote offices. With the rack-mountable device, Enterasys says, users can deploy intrusion detection at branch offices with minimal onsite configuration while managing the appliances from a Dragon Enterprise Management Server in a central office. The Remote Site costs \$4,000.

■ **Fujitsu** last week announced a blade server based on Intel's Xeon DP processor. The dual-processor **Primergy BX600** slides into a custom 7U-high enclosure that can house as many as 10 blade servers. Each server can support as much as 12G bytes of memory and two Ultra-SCSI hard drives. The BX600 is available with 2.8-GHz, 3.06-GHz or 3.20-GHz Xeon DP processors. Later this year, Fujitsu plans to ship a four-processor Xeon MP blade that will be compatible with the BX600 enclosure. Not counting the approximately \$7,000 for the chassis to house the blades, a single-processor BX600 with 512M bytes of memory and a 36G-byte hard drive will sell for about \$2,400, Fujitsu says.

■ Targeting large clustering and distributed application users, **Silicon Graphics** last week unveiled its 256-processor **Altix 3000** supercomputer and said it was readying a 512-processor product that it expects to begin shipping by year's end. Clustered versions of the Altix 3000, which use more than one copy of Linux, also will be available in configurations with four to 512 processors. The supercomputer is expected to eventually scale up to 2,048 processors, and SGI plans to offer its next-generation Numalink4 interconnect technology only on the Altix 3000. Pricing for the Altix 3000 starts at \$4.1 million for a system with 256 1.3-GHz Itanium 2 processors with 3M bytes of cache, SGI's Advanced Linux Environment 2.1 with SGI ProPack 2.4, and 256G bytes of memory.

Net6 offers twist on remote access

■ BY TIM GREENE

Net6 has introduced a gateway aimed at letting users gain full network access to corporate applications using a lightweight client or just a Web browser to connect. The company says its Net6 VPN Gateway solves drawbacks of two popular Internet-based access methods: IPSec VPNs and Secure-Sockets-Layer-based remote access.

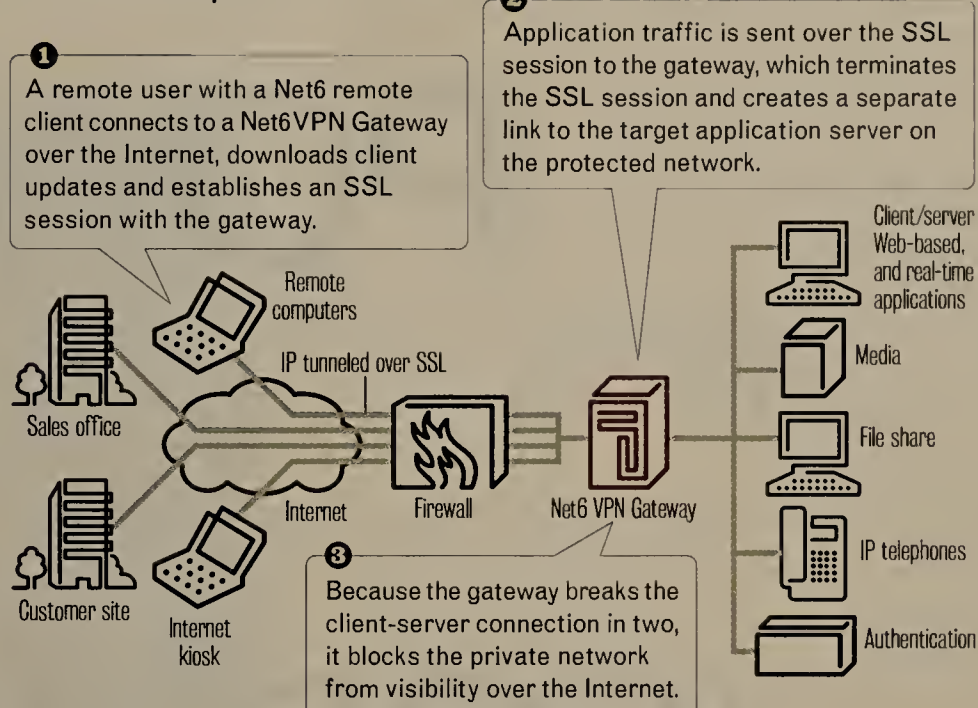
While the technologies have similar characteristics, they have differences that matter to customers. For instance, employees of e-mail security service provider Postini use Net6 VPN Gateway instead of a Cisco IPSec gateway because it is easier to distribute the necessary client software and to administer, says Jon Prall, Postini's vice president of engineering.

Net6 remote-client software is a Web download that updates itself each time users log on to a gateway. The Cisco gear requires installing the client, he says. The client makes an SSL connection to the Net6 VPN Gateway, which sits between a corporate firewall and servers the remote

See VPN, page 20

Easy opening

Net6 says its VPN Gateway allows full access to all network applications without requiring firewall reconfiguration and without having to update remote-client policies.



Cisco raises its security profile

■ BY PAUL ROBERTS

Cisco last week announced enhancements to a number of its software products and hardware designed to make corporate networks more resilient to attacks.

The company unveiled new VPN hardware and new features for the Internetwork Operating System (IOS) and Security Device Manager software to support firewalls and spot the source of denial-of-service (DoS) attacks. The new products and features are part of Cisco's Self-Defending Network strategy to create autonomic responses to network security threats, the company says.

On the hardware side, Cisco extended VPN support to the 7301 Router, letting that device support 370M bit/sec VPN throughput in addition to a firewall, routing and quality-of-service management features, the company says.

Cisco also added a new device to its 3000 line of VPN concentrators: the VPN 3020 Concentrator. That device has integrated IPSec and Secure Sockets Layer remote-access features and can support up to 750

concurrent VPN users with IPSec and up to 200 users in SSL mode, Cisco said.

On the software front, Cisco unveiled a number of new security features that come with IOS Software Release 12.3T.

The IP Source Tracker is an IOS-based security tool that lets customers access Cisco routers using a special "management channel" even when they are the target of a DoS attack. New command-line interface features in IOS give administrators more control over security operations by restricting access to features based on administrative roles, Cisco says.

The company also announced better firewall support from IOS that will let IT administrators divide their network into trust zones based on IP addresses. Also, a new software product, the Cisco IOS Firewall for IPv6, supports inspection of IPv4 and IPv6 traffic and protocol anomaly inspection, Cisco says.

Among other things, IPv6 lengthens IP addresses from 32 to 128 bits, which will accommodate a new generation of networked devices.

A new version of the Cisco Security De-

vice Manager features start-up wizards that make it easier to deploy security products, update Cisco router configurations and lock down network security. Security Device Manager Version 1.1 also extends support to the Cisco 7200 series router, the company says.

Cisco faces tougher competition on the security front after the February announcement that chief competitor Juniper is buying firewall giant NetScreen Technologies.

The company has been working in recent months to raise its security profile.

In November, Cisco and leading anti-virus companies announced the Cisco Network Admission Control program, which lets Cisco routers evaluate information, such as whether a particular computer's anti-virus definitions are up to date and its operating system is adequately patched, before letting it connect to a network. The company also is collaborating with IBM to let IBM's products communicate more directly with Cisco's network security technology.

Roberts is a correspondent with the IDG News Service's Boston bureau.

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Symbol CEO sees challenges ahead

■ BY JOHN COX

Symbol Technologies' top executive is touting the company's recent financial results as evidence of its turnaround in the wireless LAN market, but so far Wall Street isn't staging a party.

The results offer a chance to evaluate whether Symbol is shaking off ill effects of the accounting scandals, resignations and shareholder lawsuits that have dogged the company for two years.

President and CEO William Nutti, who took over in December, points to achievements in what he calls a "year of transition." But he readily acknowledges there is a lot of work remaining.

Symbol announced March 4 that fourth-quarter revenue of \$393 million was 5% higher than a year ago but still fell short of the expected \$400 million. Net income for the quarter, at \$16.2 million, was the best in fiscal 2003 and much better than the \$69 million loss reported a year ago.

Overnight, Symbol's stock dropped from \$18 per share to open on March 5 at about \$15.50. It rallied slightly then declined to

about \$14.50 and was trading just above that for several days last week.

Wall Street seemed to be ignoring what Nutti says is the company's very solid performance in 2003 in the face of a "tremendous number of challenges." They included fraud and allegations of financial irregularities, mass exodus of veteran employees from the boardroom and executive suite, shareholder lawsuits, and ongoing investigations by the Securities and Exchange Commission (SEC) and U.S. Department of Justice.

That's not counting the very slow growth in IT spending, the outbreak of war in Iraq and of SARS in Asia. "We were awaiting the [plague of] locusts around June," Nutti jokes.

Symbol is a top vendor of bar-code scanning devices, specialty and rugged mobile computers, and WLANs. Its financial reporting came under scrutiny in 2002, leading to a steady stream of bad news for customers and investors. Two executives pleaded guilty to federal fraud charges. Last December then-CEO and acting Chairman Richard Bravman resigned, as the SEC was investi-

gating a transaction in which Bravman and other Symbol employees allegedly prematurely recognized \$860,000 in revenue.

It was then that a newly reconstituted board of directors, with three new outside directors, offered Nutti the CEO position. He'd been with the company as president and COO for just over a year, after a decade at Cisco.

Nutti has a lengthy list of 2003 achievements to cite. Despite the turmoil and the economy, Symbol's total revenue for fiscal 2003 was \$1.5 billion, compared with \$1.4 billion in fiscal 2002. The 2002 figure is the restated revenue, which in this case showed an increase from the original \$1.3 billion. The company's gross margin as a percent of revenue rose to 44% compared with 40% a year ago, an indicator of improving profitability.

Symbol also paid off all its debt, put \$150 million into the bank and improved other business indicators, such as how fast it gets paid after shipping a product.

"It was a pretty darn good year," Nutti says.

At the same time, the company maintained its research and development

spending at about 10% to 11% of total revenue — about \$200 million. Nutti says customers will see the fruit of that spending starting soon this year, with an array of new products. He declined to be more specific.

Last year, Nutti also ordered a complete restructuring of Symbol's relationships with distributors and resellers. Among other changes, the direct sales force that deals with the Fortune 2000 customers will work to fulfill those orders through the appropriate channel partners.

Symbol now has about 5,700 employees, a drop of 450 compared with a year ago. Many of those came from the ranks of vice presidents and directors. Of 350 in those categories, Nutti has replaced 106.

He's instituted a range of periodic and frequent video, Webconferencing and face-to-face meetings with employees at all levels of the company. Part of that communication is recognizing employees who are achieving results and meeting goals. "Morale is not where we want it to be," Nutti says. "There's still room for improvement." ■

HP blade server gets dense

■ BY JENNIFER MEARS

HP next quarter is expected to begin shipping a two-processor Xeon blade that is half the size of its current offerings, giving business users who need minimal on-system storage the ability to pack more processing power into smaller spaces.

HP unveiled last week the BL30p, along with a single-processor tower system for small and midsize businesses. The ML110, priced starting at \$499, is the first in a line of ML100 series systems. It is expected to be a complement to the rack-mounted, single-processor DL140 that HP introduced last year, says Jim Mouton, HP's vice president of platform strategy.

The no-frills ML110 is designed for general-purpose tasks such as file sharing and mail messaging. It is available with either a 2.6-GHz Celeron processor or 2.8-GHz or 3-GHz Pentium 4 processors from Intel with 1M-byte cache.

The BL30p is aimed at giving business users more density and power, primarily for computational clusters and grid computing. Sixteen of the blades can fit into HP's 6U blade enclosure, compared with just eight of HP's dual-processor blade offering, the BL20p. By contrast, 14 of IBM's



HP's BL30p can fit 16 blades into its 6U blade enclosure.

dual processor HS20 blades can fit into its 7U blade enclosure.

The Greater Baltimore Medical Center last year replaced three racks of servers with one rack of nearly three dozen BL20p blade servers. Eric French, network manager at the medical center, says he's interested in taking a look at the even more compact BL30p.

"The more processing power per square foot the better your data center is in terms of the expense," French says. He says the

new blades would work nicely as Web servers or Linux clusters.

Two BL30ps can slide into a sleeve that lets them plug into the same backplane as the BL20p, letting the systems be interchangeable and enables an easier migration, Mouton says.

To slim down the blade, HP removed the two hot-plug SCSI drives available on the BL20p. The BL30p offers optional dual-port Fibre Channel for storage-area network connectivity.

Mouton says HP wants to address a range of compute needs as businesses make blade servers a more important piece of their data center infrastructures.

The blade market is steadily growing. According to IDC's Worldwide Quarterly Server Tracker and Forecaster, about 185,000 blade servers were shipped last year, but nearly 500,000 are expected to ship this year. IDC expects blade server shipments to reach nearly 2.3 million in 2007.

Pricing for the BL30p has not been released, but Mouton says it will be "very comparable to the BL20p." Both systems are available with the latest Xeon processors. Pricing for the BL20p, with two 3.06-GHz Xeon processors, starts at about \$5,000. ■

VPN

continued from page 17

machine is trying to reach. The gateway terminates the SSL tunnel and acts as a go-between with servers on the corporate network.

In addition, the Net6 gear requires no reconfiguration of employees' home firewalls as IPSec does, according to Prall, because it uses just ports commonly left open for SSL.

SSL remote-access gear also has lightweight clients or uses Web browsers, but Net6 says its gear gets around drawbacks that SSL remote access has. For instance, the Net6 Gateway supports all applications at the network layer, so the applications they access appear as they do on a LAN. This is also true of IPSec VPNs. Some SSL remote-access equipment has limits on the applications it can access or it displays applications with different interfaces than end users are used to.

Net6 says that while SSL remote-access products must be upgraded when a specific application is upgraded, Net6's software does not. These upgrades generally include alterations to the client/server protocols that require changes in the custom connectors within SSL remote-access software. Net6 intercepts traffic at Layer 2, so does not have to deal with these protocol changes.

The fact that Net6 gear proxies traffic insulates the network it protects from worms. Worms seeking IP addresses to find vulnerable machines might hit the address for the Net6 Gateway, but polling by the worms will not be authenticated nor contain proper information for being passed on to internal IP addresses, Net6 says.

This feature drew data-migration vendor Rainfinity to test Net6 gear for use by its employees who need to access corporate resources, says Curt Jernigan, director of IT at the San Jose company. He avoided IPSec VPNs because they create network-layer tunnels with direct access to internal IP addresses. "I just wanted to make sure there wasn't any door left open to allow in any worms," he says.

Net6 says its gear supports real-time applications such as voice and video, and because the SSL tunnel it uses employs just firewall Port 443, it solves network address translation problems that IP softphones would have crossing firewalls without a tunnel.

When Net6 Gateway and Net6 Remote are ready to ship next week, they will support Windows 2000 and XP desktops. The company says it is developing clients for Linux and Macintosh operating systems.

The gateway costs from \$160 per user for 50 users, to \$11 per user for 2,000 users. ■



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WAN router redux

more on the "near-term." For example, don't be caught installing a router and then, a year later when you are ready to implement VPNs, find out that you have to upgrade to do that. To me, it seems that many of the future-proof router vendors are simply saying: "We'll provide you with sufficient horsepower and futures Day One that will be good for the life of the box."

The vice president of technology for a U.S. mortgage broker sums up what I believe are the thoughts of the "silent majority" when he writes: "I think that you are addressing an under-covered need with this topic. For the majority of us two-, three-, four-location operations that need affordable performance, I hope you or somebody starts publishing price/performance metrics and discussion about what is 'good enough.'"

Indeed, "good enough" is a key concern when the access speed for the corporate branch (likely T-1) is in the realm of speeds now common for home broadband connections. Given that a 5-year-old PC running NT likely can route T-1 at wire speed — and that "speeds and feeds" are such popular metrics — how does one decide what to use? On the other hand, it is highly likely that the least expensive router you can find can handle a basic T-1 connection.

The real challenge comes when deciding what type of "value-add" functions you need your router to handle. Do you need IP multicast? Or Fast Ethernet local routing? Or do you want your router and LAN switch integrated into one box as some vendors are proposing? Your answers will

help you pick the right box.

Tilting things in Cisco's favor, according to a writer from a New York law firm, is inertia in the T-1/E-1 market. "Clearly in the T-1/E-1 space there is little reason to risk change. But on the higher end, Cisco is vulnerable on price. DS3-capable routers cost more than they should," he says. He sees a waiting market for a wire-speed DS3 router.

And, finally, a writer from a Cisco partner in the U.K. reminds us that Cisco's propri-

etary Enhanced Interior Gateway Routing Protocol remains a lock-in. He closes with an enticing: "There are various other interesting issues around sales tactics that this leads into . . . but I'm not prepared to put those in writing."

Tolly is president of The Tolly Group, a strategic consulting and independent testing company in Boca Raton, Fla. He can be reached at ktolly@tolly.com.

As promised, this week's column highlights some comments I received in response to my recent column about Cisco's WAN access routers (www.nwfusion.com, DocFinder: 1125).

Unlike so many areas, the letters were very matter-of-fact and passion-free. That would seem to be in character with the workhorse nature of the access router. While I don't think it appropriate to draw conclusions from the handful of messages, some interesting and valid points were made.

"Cisco is overpriced and underpowered," writes the IT manager of a U.S. coatings manufacturer. "The other companies can integrate just fine into existing and planned networks." This is a sentiment I've heard over and over again from end users during Network World seminar tours.

This same writer, though, takes exception to the "future-proof" sales pitch and dismisses it as likely FUD. "Being future-proof sometimes is as much about not overspending on the tools that you need in the hopes that they will be the tools that you will need five years from now," he says. In essence, I know that in the future I'll probably want something new, so let's not dwell too much on that.

In defense of the future-proof routing vendors, they probably are focused a little

Dell, VMware boost server wares

■ BY JENNIFER MEARS

Dell last week announced it is extending its partnership with server virtualization software maker VMware to bring high-performing virtualization capabilities to its four-processor PowerEdge 6650 systems.

New configurations of Dell PowerEdge servers and Dell/EMC storage running VMware's ESX Server virtualization software and using VMware's VirtualCenter and VMotion technology are designed to let businesses make more efficient use of their data center resources, says Pete Morowski, vice president of software development in the Dell Product Group.

VMware's software lets companies split Intel-based servers into virtual partitions, running multiple operating systems and applications on one box.

VMware brings this partitioning capability to standards-based systems and has

partnered with server makers such as Dell, HP and IBM during the last year as users have looked for ways to get better use of a growing number of Intel servers. Storage vendor EMC acquired VMware in January.

Dell has partnered with VMware in the past, offering the software maker's GSX Server, designed primarily for departmental and testing environments.

The Dell-VMware Virtual Infrastructure configurations, which are tested and supported by Dell, include Dell PowerEdge 6650 servers running VMware ESX Server 2.0.1, VirtualCenter and VMotion; Dell/EMC CX300 and CX500 storage systems to enable VMotion capability; and a Dell PowerEdge 1750 running the VMware VirtualCenter Management Server.

The configurations start at about \$30,500 for a two-processor Dell PowerEdge 6650, internal storage and VMware ESX Server. ■

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March 15, 2004

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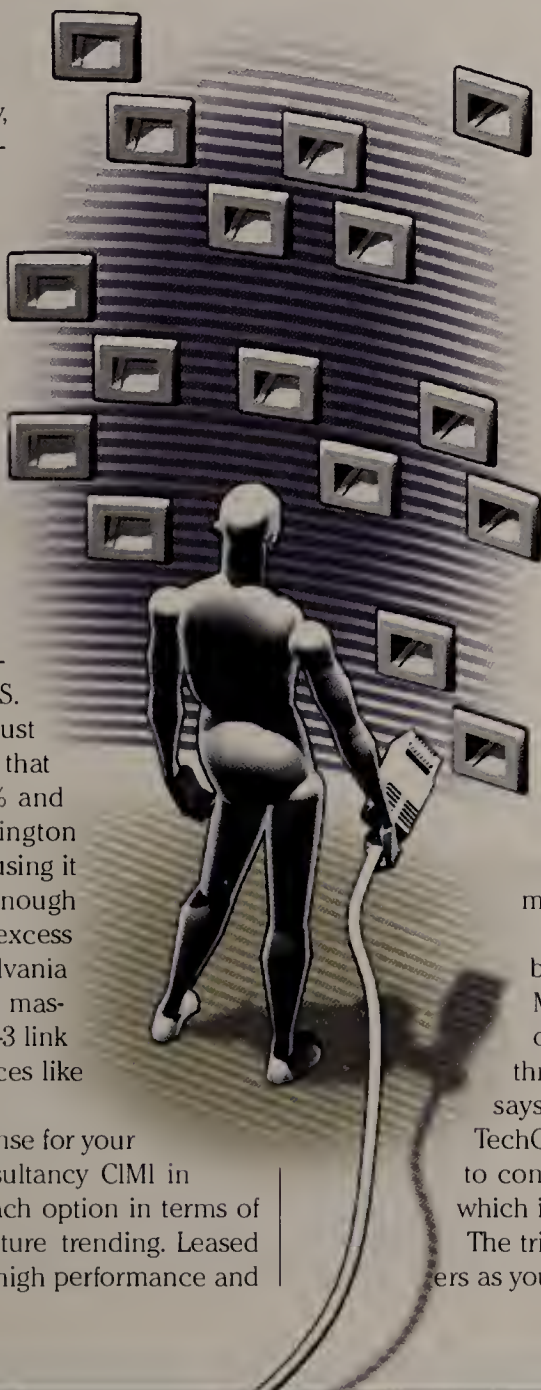
MANAGING FOR MAXIMUM WAN VALUE

How to make sense of wide-area service options and get the best bang for your buck – and your applications. ■ By Paul Desmond

Private lines, frame relay, Internet, VPNs, Multi-protocol Label Switching: Never have enterprise users had more WAN options from which to choose. While the mix makes it more likely you'll find services that fit your applications, the array of choices also can make it more challenging to ensure you are consistently getting the best value for your WAN dollar.

Companies are responding in ways that reflect their range of requirements. Quaker Chemical has used compression devices to squeeze more bandwidth out of its frame relay networks and now is moving to MPLS. Champps Entertainment chose to oust frame relay for a managed VPN service that cut the company's costs by about 70% and increased bandwidth. George Washington University is buying up dark fiber and using it to connect to the Internet, and has enough headroom that it is looking at selling excess capacity. The commonwealth of Pennsylvania pooled its state buying power into one massive contract that enables it to get a DS-3 link for as little as \$1,800 per month. At prices like that, no compression is required.

To determine which services make sense for your enterprise, Thomas Nolle, CEO of consultancy CIMI in Vorhees, N.J., recommends assessing each option in terms of its price, performance/stability and future trending. Leased lines would be classified as high price, high performance and



stable, but with a gloomy future, meaning they are likely to become more pricey over time and more difficult to obtain as the number of suppliers decreases. Frame relay is moderately priced and offers generally good performance and stability. The price of frame relay is likely to decline somewhat going forward, but so is service availability, as fewer carriers offer the service. VPN services are generally low-priced, with relatively poor performance and stability, but there are a large number of providers from which to choose.

Steven Taylor, president of consultancy Distributed Networking Associates, says all of that might be moot if your network configuration determines the choice. Obviously, private lines and frame relay are better for point-to-point or hub-and-spoke configurations, while IP-based services might be better for distributed networks.

When it comes to drawing distinctions between services such as frame relay and MPLS as an alternative to private lines, it is often best to simply ask for quotes on all three and make your decision after the fact, says David Rohde, a senior analyst at TechCaliber. While there are a number of issues to consider, the decision might come down to which is less expensive.

The trick is to put the bid out to as many carriers as you can and to write an RFP that is specific

Profiling WAN service options

Consultancy CIMI predicts that future price trends for private lines look good for users while the outlook does not seem so rosy for VPN customers.

	Price	Performance/ stability	Future price/availability trending
Private lines	High	High	Negative
Frame relay	Moderate	Good	Somewhat negative
VPN	Low	Low	Positive

about the level of service you need. "Otherwise, carriers will bid what they have," Rohde says. "The variable is the quality of your RFP."

Driving a bargain

You might be surprised to learn that private-line prices have fallen since last you checked, especially for higher speeds. "T3 and OC-3 just don't have that same 'Oh my God' factor anymore," Rohde says. "Prices of \$20,000 per month are just gone."

In Pennsylvania, they are long gone. In May 2000, the state signed a five-year deal with an alternative carrier that is standing the test of time. Pooling 22 contracts garnered the state enough buying power to build a statewide SONET ring that connects more than 250 state buildings and 17 institutions of higher education. The smallest access link any agency has is a T-1, and most have OC-3, says Charles Strubel, the commonwealth's acting director of the Bureau of Commonwealth Telecommunications Services. Each OC-3 costs only about \$3,300 per month, and DS-3s go for about \$1,800 — regardless of distance, he says.

Rohde is likewise bullish on the frame relay deals available, citing a "compression of the curve" trend that he says is accelerating. In the past, if a 56K bit/sec frame relay port cost \$250, a T-1 would go for \$1,500 to \$2,000. Now the price difference between 56K, 128K, 256K and even 512K is marginal.

"And the price for T-1 is so much less than it was two years ago that you've got a real compression there," he says. If your frame relay network is dominated by 56K and 128K ports, ask for a price at 256K. "It may not cost you much more. Try it again at half a T-1. Again, you'll be surprised. That's the way to optimize

bandwidth at this point," he says.

The VPN option

Unless, of course, you ditch your frame relay network entirely and go with a VPN, as Champps Entertainment did. Champps owns and operates 43 restaurants and franchises 13 others across the country. The company had paid about \$700,000 per year for the frame relay network that tied those locations to the company's Littleton, Colo., headquarters, says Steve Johnson, director of IT for the firm. "It was straining our IT bottom line," he says.

When the company first installed the frame network in mid-2001, Johnson says he considered a VPN option, but wasn't comfortable that it was secure enough. Now, with improved IPsec encryption algorithms, it's a different story.

Champps opted for a managed VPN service from Netifice Communications that costs \$200,000 per year. "Originally we had T-1 access with guaranteed 56K bit/sec frame relay, burstable to 128K," he says. "Now we have [asymmetrical] DSL, 1DSL or business cable, with 144K

to 256K guaranteed. So we ended up increasing our bandwidth without trying too hard."

He understands that the new setup isn't likely to be as reliable as his frame network, but says he can accept that risk. "We don't have to be online 24 hours to serve you a beer," he says.

Still, Champps is in the minority in that it is employing a VPN for its enterprise backbone, according to Rohde. Most companies use VPNs for remote access, not as an alternative to backbone WAN links.

Nolle expects that to change as carriers redefine their VPN services, probably by next year. "VPNs will start to show price polarization, and we'll see a separation of low-end and high-end services," he says. "You'll have IP services that are separate from the Internet. We're going to see the creation of IP infrastructure in the facility model become a mandate for pretty much all of the common carriers."

Web-services based applications will help drive this phenomenon, he says, because they are more tolerant of variables in network behavior than many existing applications. "If you have an application that is tolerant of variability, you'll be able to deliver it over a service that has traded performance stability against cost," Nolle says. By next year, he says he expects carriers will offer access, via a single pipe, to IP-based services that offer varying levels of performance.

MPLS movement

What carriers already are pushing is MPLS-based services, especially for international networks, Rohde says. MPLS is delivered in a fashion similar to frame relay, but without the concept of

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“IT’S LESS EXPENSIVE FOR US TO JUST GET MORE BANDWIDTH.”

David Swartz, CIO, George Washington University, on why the university has no use for compression gear, packet shapers, filters or any of the other equipment meant to conserve bandwidth.

permanent virtual circuits, which are network paths that must be defined in advance. With MPLS, packets are routable, able to be shuttled from one port in the network to any other at will.

“No matter what you ask for, expect the carrier to say, ‘We can do this with MPLS,’” Rohde says. Given that, ask for it up front so you can better control the negotiations.

Quaker Chemical is one company that is taking the leap to MPLS after milking every last bit out of its frame relay network. The company, based in Conshohocken, Pa., has used frame relay to connect 17 sites — six in the U.S., six in Europe, two in South America and three in Asia — to its data center in the Netherlands.

Three years ago when it rolled out an ERP application the company faced the need to double network bandwidth to 512K bit/sec, says Irving Taylor, Quaker’s vice president and CIO. Instead, it opted for compression devices from Peribit Networks, which worked well enough to quadruple capacity, staving off the upgrade and providing a ROI in about six months.

Now the company is looking to MPLS

to save more money — roughly 10% vs. the frame relay setup. Given MPLS will be delivered as a managed service, as is his frame relay network, the rollout should be painless for Quaker.

Taylor expects it will be easier to get MPLS-based services in outlying areas of countries such as China than it is to get frame relay links. He also can still use the Peribit compression equipment.

Big, big bandwidth

George Washington University, on the other hand, has no use for compression gear, packet shapers, filters or any of the other equipment meant to conserve bandwidth. “It’s less expensive for us to just get more bandwidth,” says David Swartz, CIO for the university, in Washington, D.C.

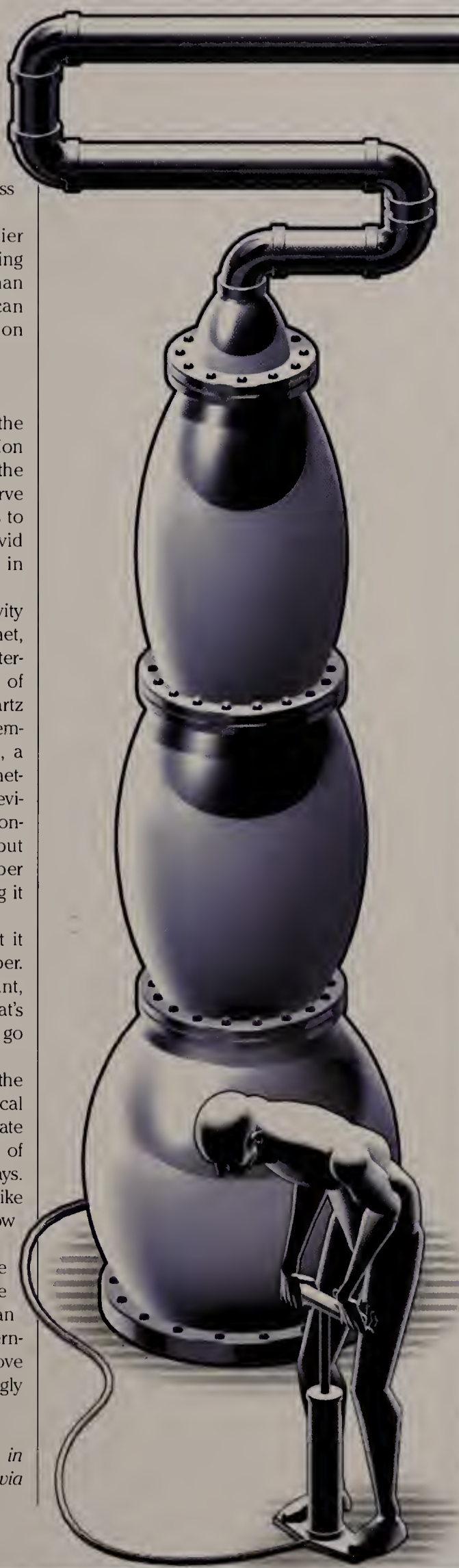
For virtually all of its WAN connectivity the university relies on the Internet, including the high-performance Internet2 network run by a consortium of some 200 academic institutions, Swartz says. The university is a founding member of the Mid-Atlantic Crossroads, a consortium that operates an OC-48 network in the D.C.-Baltimore area. Previously, the university bought OC-3 connections from its local carrier, but recently saw the price of dark fiber falling so fast it couldn’t resist buying it up and lighting it up.

“The cost is probably 10% of what it used to be,” Swartz says of dark fiber. “Once you acquire a certain amount, you can resell [wavelengths], and that’s what we’re doing. This may actually go from a cost center to a profit center.”

The university’s total costs are about the same, given the cost of the fiber, optical equipment and the personnel to operate it. “But we’ve probably got an order of magnitude more bandwidth,” Swartz says. “In the past we had to look at things like caches [to conserve bandwidth]. Now we just overengineer everything.”

His advice to those in more remote areas where dark fiber might not be readily available: “Move to an urban area.” Fiber, Swartz says, is the modern-day equivalent of the rivers that drove the growth of major cities. “So I jokingly say that, but I’m not kidding.”

Desmond is president of PDEdit in Framingham, Mass. He can be reached via www.pdedit.com.



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Enterprise Applications

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IronPort, Proofpoint appliances target spam

■ BY JOHN FONTANA

With spam and viruses reaching epidemic proportions, messaging security vendors IronPort Systems and Proofpoint are releasing appliances designed to help IT deal with the onslaught.

This week, IronPort will release C10, an all-in-one appliance for protection against messaging vulnerabilities, which include spam and viruses. It is designed for organizations with less than 250 e-mail users. The C10 is modeled after IronPort's C60 and C30 appliances for larger organizations.

Proofpoint last week introduced its first appliance, called the P-Series Message Protection Appliance. The appliance uses a stripped-down Linux kernel and Proof-

point's Protection Server 2.0 software, which also was released last week.

"The new features of 2.0 are not what sold me on the appliance," says Sam Shoen, manager of the Web team for U-Haul in Phoenix. "I like the built-in administration, the fact that I can control all of the lower-level functions from a single device." Those functions include the message transfer agent (MTA) that connects a corporate messaging system to the Internet.

Shoen ran the Protection Server on a Linux server before he replaced that configuration with the P-Series appliance. The previous configuration made him a little nervous, given that the company does not have any Linux expertise on staff. U-Haul supports 5,000 users on its e-mail system that runs on Open Text's FirstClass. "I don't have to know how to configure Sendmail MTA. Now it's all in the appliance, and I have a single point of support if something goes wrong," he says.

The Proofpoint appliance includes the Protection Server 2.0 software, which features multi-layered spam filtering including inspection of the Simple Mail Transfer Protocol header, the body of the e-mail, and structured and unstructured data associated with the message. It also adds Smart URL Blocking, which examines URLs and determines how much information has been forged in the e-mail header. Proofpoint has added controls to evaluate whether a message might contain pornographic content, which is often hidden behind creative spellings, and filters for foreign language spam. It also lets end users add their own personal safe and block lists.

The appliance includes a Red Hat Fedora Linux kernel that has been stripped of about 85% of its features. It also has firewall capabilities to protect open ports. The box has a Web-based management interface and is being developed with Dell.

It comes in three models: the P400 for \$20,000, the P6000 for \$30,000 and the P800 for \$45,000, which can handle up to a million messages per day.

IronPort's C10 also includes a content scanning engine, the ability to detect threatening e-mail traffic patterns and the ability to fend off mail storm attacks.

C10 pricing has not been determined.

The two companies compete with BorderWare Technologies, CipherTrust, MailFrontier and Mirapoint. ■

Site: Lessons from leading users

Web services project protects healthcare provider

■ BY JOHN FONTANA

Two years and several Web services projects later, Providence Health System is systematically using the nascent technology to craft a network of reusable components that likely will save it more than \$1 million per year, lead to better patient care and potentially save lives.

Providence, a 606,000-member system of hospitals, clinics and assisted-living complexes in the Northwest, is in the second phase of a multi-step Web services project. The project will make medical and other records, which are spread across disparate systems, accessible to patients and physicians through portal-based applications.

Two years ago, the Seattle healthcare company got its first taste of Web services with a project that created profiles that made it easier for patients to interact over the Web with the healthcare provider, a nonprofit that the Sisters of Providence ministries established in 1859.

The latest project is a Web service that pulls together in no more than 3 seconds all the electronic medical records a patient's primary care physician has stored, the company says.

If a patient walks into a Providence emergency room in the evening, the staff could look up his name and discover his primary care physician earlier that day had performed a particular test or procedure. The staff could access the results and avoid the cost of a repeat procedure.

The system aggregates data from 27 physician offices. Those offices operate within Providence and store their data in back-end billing, clinical, laboratory and ambulatory care record systems in 10 Oracle databases Providence maintains on its network.

"This is more of a business-based ROI based on what this new technology will allow physicians to do," says Mike Reagin, director of research and development. "It is significant to say that potentially making this technology avail-

See Providence, page 28

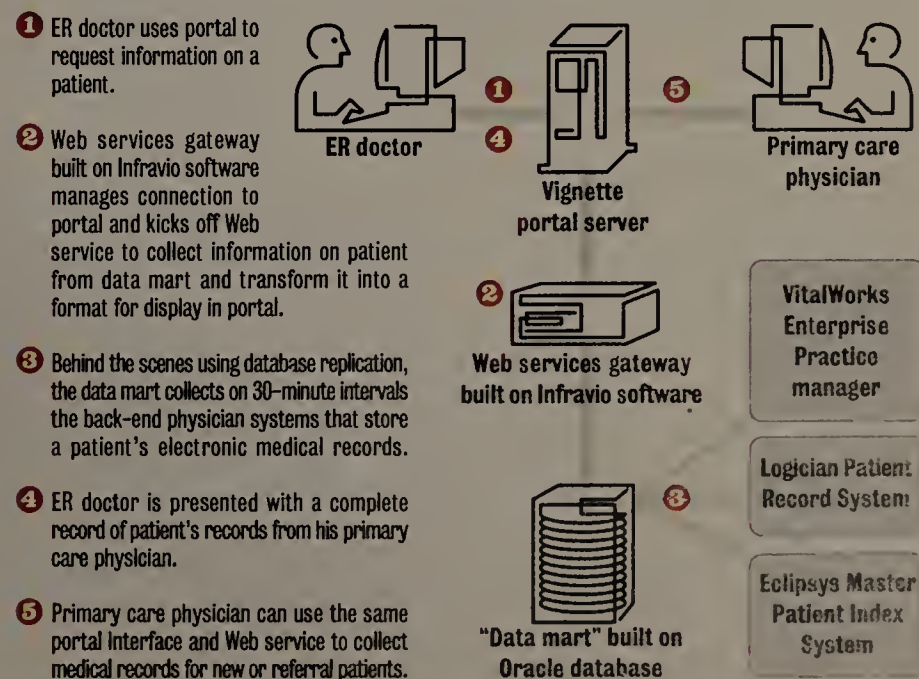
Takes

■ Application firewall maker **Teros** said last week it is adding XML security features to its **Secure Application Gateway**. Customers will be able to choose to use the features for an XML or HTML security appliance, or use it to protect against XML- and HTML-based attacks. The new features will let the Teros gateway inspect XML traffic using Simple Object Access Protocol for many of the same attacks it looks for in HTTP traffic, such as buffer overflows. Like the Secure Application Gateway, the Web Services Security Gateway will start at about \$20,000. No price has been set for the combined Web services and Web application firewall.

■ **Groove Networks** this week will release the first beta of **Groove 3.0**, which includes enhancements to its file-sharing tools, contact organizer, and notification and alert features. The software, expected to ship this summer, is finding favor with corporations trying to support mobile users and distributed teams using line-of-business applications, Groove says.

Patient data

Providence Health System is adding to its list of Web services with a service that aggregates patient information and displays it through a portal interface to emergency room doctors.



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Flash: More than just glitzy Web sites

■ BY JASON MESERVE

When it debuted in 1997, Macromedia's Flash technology was the equivalent of an animated GIF image on steroids, used to create online cartoons and productivity-sapping games like Elf Bowling. But the perception is changing as companies such as Jordan's Furniture in Massachusetts and Blue Cross/Blue Shield of Michigan use the technology to enhance customer relations with room-planning and competitive-analysis applications.

Flash is a proprietary file format used to combine text, images, audio and video with scripting to create a movie or application. The key to the technology is the Flash Player, a plug-in that lets Flash files be embedded and displayed on any Web browser on Windows, Macintosh and Linux (the Linux client has not yet been updated to Version 7). Macromedia says at least some version of Flash is installed on at least 98% of Internet-enabled PCs.

Developers can use Macromedia's Flash MX 2004 development environment to create Flash applications from scratch or use tools such as Breeze (presentations) and RoboDemo (software demonstrations) — tools Macromedia acquired through acquisitions — that let business users output content in Flash format. A standard Web server using HTTP can deliver Flash applications.

When the company rolled out

Flash MX 2004 in August with support for Simple Object Access Protocol and XML, Macromedia said it hoped Flash-based applications would act more like a traditional client-server application with the Internet as a network.

"A browser doesn't provide a good way of getting to data because the screen needs to be constantly refreshed," Norm Meyrowitz, president of products at Macromedia, said when the product was launched. "We can create more intensive stuff with a better interface. Instead of downloading a big data dump, we can cursor through 10 records at a time."

Jordan's Furniture's online Room Planner application is an electronic version of a cut-out planner that lets Web site visitors (www.jordans.com/roomplanner.asp) lay out a room from scratch or use 15 pre-built rooms. Furniture dimensions used in the design are pulled from Jordan's product database. The designs can be saved, printed and shared with friends. Customers also can collaborate online with a Jordan's salesperson to get advice.

Hookumu, a small software development shop in Londonderry, N.H., designed Room Planner for Jordan's and now sells it to other furniture retailers and interior designers as Icovia Room Planner.

"Room Planner is like an online version of Visio with back-end intelligence," says Steve Street, Hookumu's president.

Flash applications

With Flash becoming more an Internet application development tool, here's a look at some of the pros and cons of using it.

Pros

- Flash Player on 98% of Internet-enabled PCs.
- Use of Vector-based graphics lowers bandwidth requirements for graphics-intensive applications.
- Built-in XML parser for data exchange.

Cons

- Bandwidth hog: Large multimedia applications can clog narrowband Internet connections.
- Hidden from view: Flash files not indexed by most search engines.
- Latest Flash Player (Version 7) not available for Linux/Unix.

The application the customer uses is a 536K-byte Flash file that's downloaded once and stored locally. Flash uses vector-based graphics to help shrink the application size and the amount of data that is shuttled between the client and server during the customer's design process.

But why not build the application in Java, whose applications are delivered and run in a similar fashion to Flash?

"Java has a whole host of issues like security and compatibility, plus it is slower and not as sexy," Street says. "Plus, a lot of firewalls don't let Java applications through because they can write to the desktop [a security risk not inherent in Flash]."

Blue Cross uses Flash for its network comparison and analysis tool (NCAT), an application

employees use to graphically illustrate network healthcare providers for a product, such as an HMO, in specific pieces or the entire state. Blue Cross develops in Flash MX 2004 because of its support for Web services. Information is pulled from back-end databases using ColdFusion 6.1.

When Blue Cross began planning the application last year, it looked for an off-the-shelf reporting tool before deciding to build from scratch.

"We were finding there were solutions, but the look-and-feel and usability were not there," says Scott Hamerink, project lead for Blue Cross. "They did what they were supposed to do, but it was not something we could present to customer, and they would easily understand."

Before NCAT, Hamerink says

there was no central process for creating the customer report, which could number 250 or more annually. He estimates NCAT saves the company at least \$15,000 per year in paper costs and to have someone run the analysis every day.

Even though Macromedia improves Flash performance in product revisions, developers have to be wary of bloated files that take too long to download.

When Cinemetrix, a video marketing production company based in Newton, Mass., developed a 5-minute Flash movie for UPromise, the college savings plan, it used a custom pre-loader algorithm to push content down to the viewer as quickly as possible. "We wanted to make sure there are no pauses and glitches in the movie," says George Gagliardi, CEO of Cinemetrix.

To ensure smooth playback, Cinemetrix's pre-loader determines the speed of the user's connection and calculates how much of the movie must be loaded ahead of time before it starts, much like how Windows Media or RealPlayer buffer streaming media files before they start.

Another potential pitfall is player compatibility. While the same version of Flash Player runs consistently across all supported platforms, some new features in Flash MX 2004 only might play in Flash Player 7 and not the older (and still more prevalent) Flash Player 6 technology. ■

Site:

Lessons from leading users

Providence

continued from page 25

able to physicians can save us \$700,000 per year." That's in addition to savings Providence gets with its Profile Manager Web service introduced two years ago (see www.nwfusion.com, DocFinder: 1132).

As its Web services effort has evolved, Providence has created its version of a service-oriented architecture (SOA) built on a component collection that provides simple and reusable interfaces for incorporating patient data into an application.

"We feel we have achieved an SOA by being able to use the same integration across different lines of business and different customers internally," Reagin says. "It's the first time that has happened with our integration."

He says the SOA is defined on his net-

work and in the application development process.

The Infravio Ensemble Web services management suite orchestrates data extraction and display on the portal. Infravio and the Physician Web service sit on a pair of Compaq 700 MHz servers that run Microsoft's Windows 2000 Server and Internet Information Server. That package is load-balanced by a Cisco Content Services Switch 11000 and runs over a 100M bit/sec Ethernet backbone.

Infravio secures access by only letting authorized applications running on authorized servers access the Web services.

"Infravio manages security at the application layer rather than a higher layer, so it helped us provision and manage security," Reagin says. The Physician Web service also uses digital certificates so only an authenticated user can request information through the portal. He says security is made easier because the whole sys-

tem runs within its firewalls.

The overall security architecture meets Health Insurance Portability and Accountability Act regulations, which require securing access to patient data.

On the development side, Providence uses Microsoft's Visual Studio .Net to build services that live on the network and can be accessed through standard interfaces based on XML and the Simple Object Access Protocol.

"Part of the problem was getting the information in a semi-real-time fashion from these different systems and aggregating it together and then doing the search and displaying it back in the portal. It's pretty difficult," Reagin says. "I think it could have been done in the past, but it would have been a lot more development."

The reusable Web service cuts an average of 30% off the development time for new applications that need to incorporate patient data, he says.

While the Web service makes patient records available in near real time to ER doctors, it also lets physicians see what sort of diagnosis, tests and treatments a patient has received from other primary care doctors. Providence plans to use the Web service as part of a patient service that would allow access to lab tests through a secure messaging system based on Web services developed by Kryptiq.

Despite the progress Reagin has seen, he knows there is more to come.

"We haven't used the full power because we use Web services only internally and in a very limited external fashion," he says. He says he hopes other organizations will adopt Web services and foster more business-to-business interactions. "The true power of this is going to be realized when we can have other businesses and healthcare organizations working together using Web services technology," he says. ■

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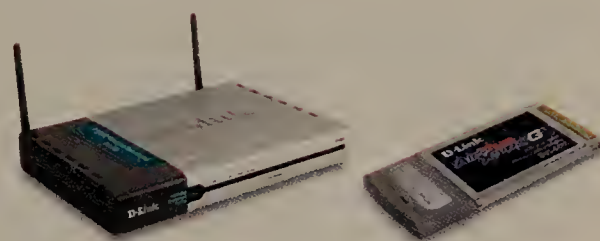


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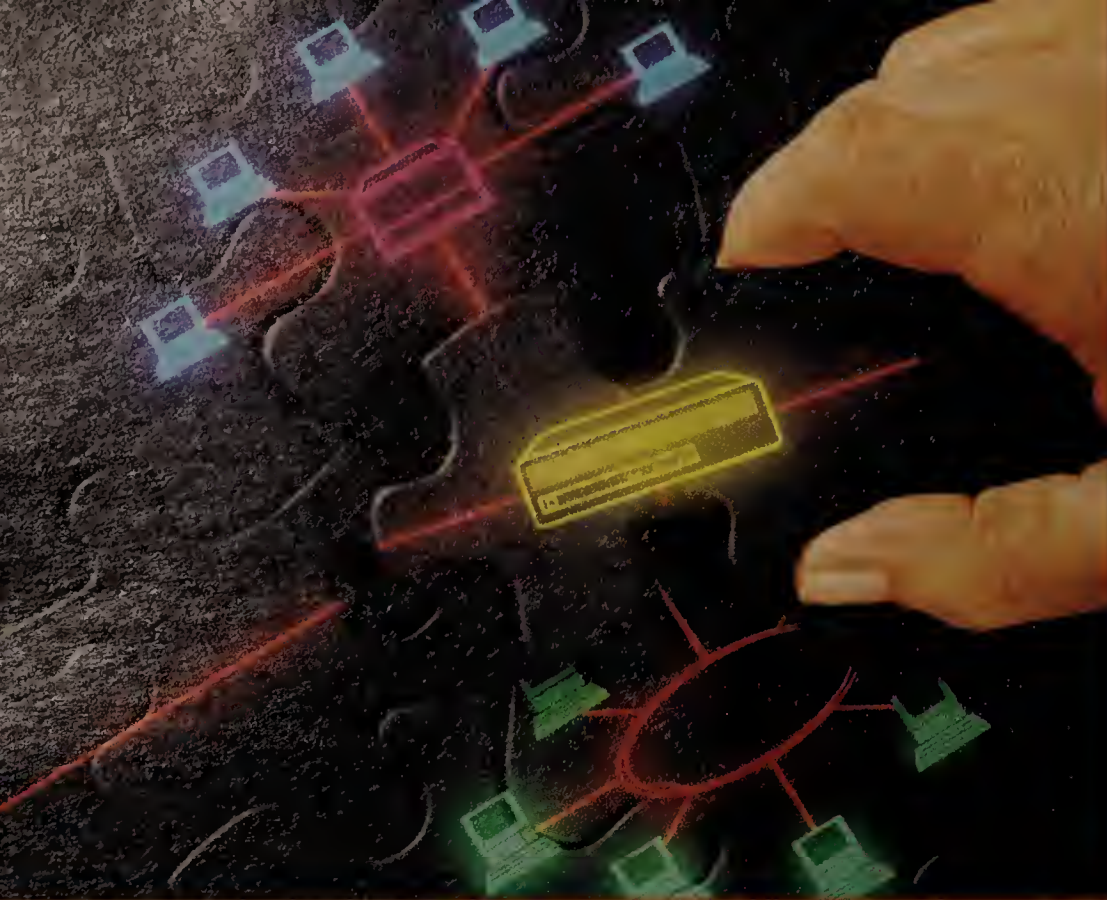
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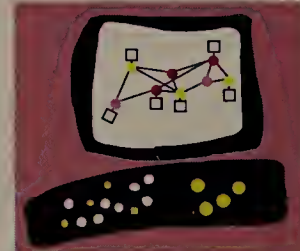
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'NET
INSIDERScott
Bradner

The butterfly as protector (or petty censor?)

scape, anti-world special code might be in the recently leaked Windows source code. A corporate environment that could lead to the petty blocking of searches for a potentially competitive product might just

make the comic strip not so funny.

Disclaimer: Based on a search for "humor" on Harvard's home page, Harvard must be a funny place. Not everyone would agree, but the above attempt at educational

humor is my own.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sob.com.

I first saw it on Slashdot: A Czech Web site reported that the MSN search function was blocking searches for the string "xfree86." If true, that would be stunningly petty. Well, it was true, but it looks like that is not all the butterfly's search engine is up to.

I went to the search engine (<http://search.msn.com>) to try for myself, and sure enough when I looked for "xfree86" I got back a message that said:

"You have entered a search term that is likely to return adult content."

Searches for xfree*, where * was everything from 80 to 89 other than 86 produced reasonable results but where * equaled 86 I got that same message.

Just what is XFree86, and why would the overly protective butterfly block access? According to the XFree86 Project home page, XFree86 is "a freely redistributable open source implementation of the X Window System that runs on Unix(R) and Unix-like (like Linux, the BSDs and Solaris x86 series) operating systems and OS/2." That does not seem all that likely to threaten Microsoft's future, even if traditionally "the XFree86 Project has focused on the Intel x86-based platforms." So I guess it was an excess of petty zeal that caused someone at MSN to tweak things in this way.

When it came time to write this column I found out that it had not taken long for the Slashdot story to get the tweak removed. Searches for "xfree86" now return almost 230,000 responses with the XFree86 Project home page as the top response.

I tried a few searches on MSN search, Google and Yahoo. (I tried Ask Jeeves but it does not report how many hits it gets.)

A few searches and their hit counts: (MSN=M, Google=G, Yahoo=Y)

"xfree86" — M: 229,250; G: 2,350,000; Y: 1,270,000

"microsoft" — M: 21,456,004; G: 70,000,000; Y: 104,000,000

"macintosh" — M: 4,142,464; G: 12,300,000; Y: 21,500,000

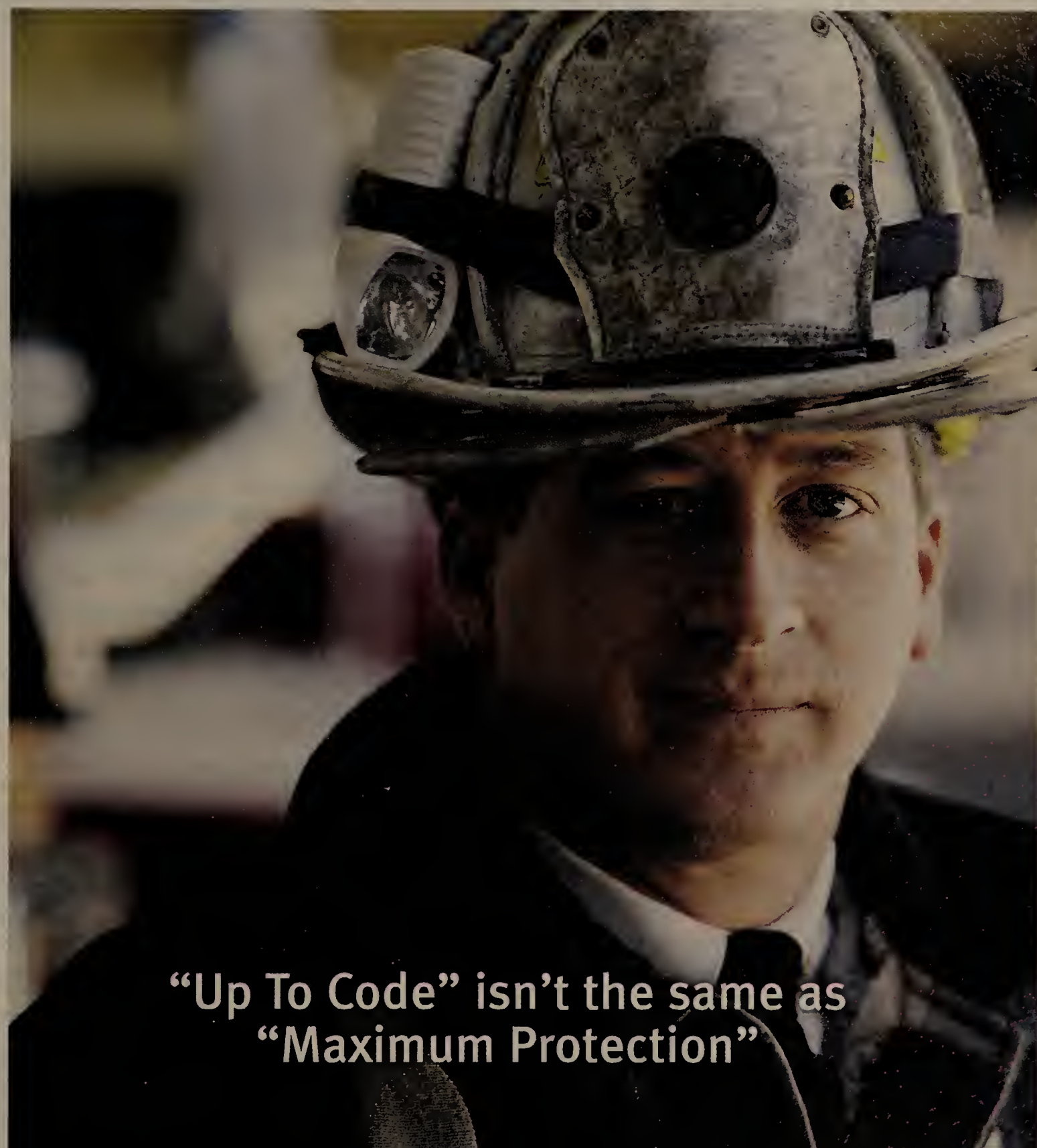
"scott bradner" — M: 5,827; G: 23,000; Y: 40,600

"bill gates" — M: 60 or 802,509; G: 2,650,000; Y: 3,750,000

The "60" is not a typo. The first few times I searched for "bill gates" I got 60 hits. Later, the same search returned more than 800,000. Looks like the butterfly is being a bit tricky.

Based on these few tests I'm not going to recommend what search site you should use. But you can guess what will not be my default search site.

For the past week or so the comic strip Fox Trot (www.ucomics.com/foxtrot) has been running a series in which the characters imagine what anti-Apple, anti-Net-



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Special Focus

SOFTWARE: Database trends

Open source database improvements grow

■ BY JOHN COX

New open source databases users seem to blend the fervor of religious converts with the hardheaded realism of IT professionals.

"I needed an inexpensive database that could handle millions of records and generate [query] results in as short a time as possible," says Rich Allen, voice/data traffic coordinator, at Matanuska Telephone, an independent telco in Alaska.

He replaced flat text files and the Filemaker application with an open source version of MySQL.

"In addition to being free, and robust enough, it is also the most stable application I have ever used," Allen says. "MySQL is running on a dozen different Mac OS X servers and has never failed in the three years I've been using it."

The open source software is taking care of the most critical data for the telco: subscriber inventory for each of 52,000 access lines, billable call record data and traffic logging.

Allen's experience is typical. Open source databases often still are used in specialized niches. But they are important, even vital, niches for a growing number of corporations: Web portals, e-commerce applications, high-speed Web searching, content management, and most recently, data warehouse reporting.

Consider what's happened with these databases:

- Use of MySQL grew more than 30% in 2003, according to a database survey by Evans Data. In the same period, use of Microsoft SQL Server and Access grew just 6%.
- PostgreSQL 7.5, due out around June, will run on Win32 platforms for the first time, offer a passel of performance improvements, partition data more efficiently, and might include support for two-phase commit, which is vital for transaction processing.
- MySQL next month will unveil new software to cluster database servers, so applications keep running if one server fails.
- February saw the release of Version 1.5 of Firebird, which is based on Borland's short-lived public release of the venerable Interbase source code in 2000. A key change is shifting the code to C++ in preparation for an array of enterprise-related improvements being hammered out for Firebird 2.0.

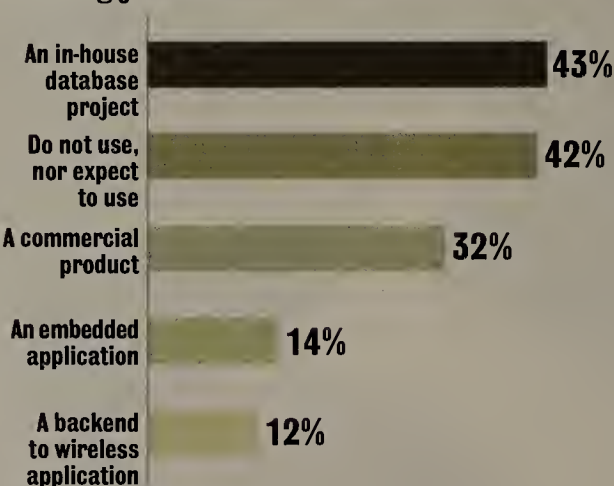
A nice mix

The mix of developers, consultants and some vendors in the communities that create and extend these databases are moving between adding features that make these open source applications more reliable, and trying to avoid the panoply of elements that make commercial databases such as Oracle or Microsoft SQL Server complex and demanding.

Increasingly, these databases are being seen as part of a package, or stack, of open source software that can create an application infrastructure for corporations. The initial version of the stack was dubbed LAMP, for the Linux operating system, the Apache Web server, the MySQL database, and either PHP, Python or Perl as the development language. PostgreSQL boosters have been promoting what they call a "brighter LAMP," which is Linux, Apache, middleware (such as Java application servers and messaging) and PostgreSQL. The effort reflects the consensus that

Open source databases slowly gain adherents

Percent of respondents who use, or expect to use, an open source database in the coming year for:



This question was answered by 536 corporate database users, in small to large companies, during a December 2003 survey. Users were allowed more than one response.

SOURCE: EVANS DATA

PostgreSQL is better suited to large-scale, high-volume applications.

"Smaller companies want a simple [application] solution, with no licensing fees, which they can get up and running quickly," says Fred Moyer, a founder with his partner of Redhotpenguin.com, a consultancy specializing in open source database applications based on PostgreSQL. The open source stack lets him do all that, and he can deploy ready-to-use application modules, written in Perl, from sites such as Cpan.org.

Moyer is working with a few large companies that are evaluating PostgreSQL as a potential replacement for some of the Oracle databases they currently use. "Not everything they need is there yet [in PostgreSQL]," he says. "But it will be during the next six to 24 months."

The Robert Frances Group, a market research firm, recently completed a study on ROI for Linux deployments in corporations. "We found that application 'owners' are more willing to look [farther] up the stack for open source deployments, to consider application servers and databases," says Chad Robinson, senior business analyst with the firm.

It's easier to treat open source databases as part of a software infrastructure because developers are adding the features needed for that role.

MySQL, the U.S. arm of MySQL AB in Sweden, will release next month at its annual user conference details of new database clustering software. The company just acquired the software from Ericsson, which had started the project to let applications riding its cellular hardware shift from a failed database server to a backup without losing data or crashing.

The clustering software will be an additional product from the company, and like the MySQL database itself will be available either under an open source license, the

GNU General Public License or under a commercial license.

The new software is part of an effort to make the MySQL database indispensable in critical applications, such as online air ticket fare searching as users search Sabre Holdings and Travelocity. "It will cause people to look at MySQL in a whole different light," says Zack Urlocker, vice president of marketing for MySQL.

In the past year, the database has added support for transactions and stored procedures and other enterprise features, all of which have been standard on commercial products for years.

PostgreSQL 7.5 is due out this summer, with the major change being a port for Win32-based operating systems, says Josh Berkus, one of five members of the PostgreSQL Core Team that acts as project administrators for the development work. Currently, the database only can run on Windows operating systems via an emulator, which limits access to a range of operating system features.

PostgreSQL traces its roots to Ingres database project at the University of California at Berkeley in the mid-1980s.

Other changes in 7.5 will include:

- A new memory management algorithm to boost performance for big databases with lots of user activity.
 - Table spaces to simplify storing data in specific disk location, called partitions, which lets you create big databases that still have fast performance.
 - Two-phase commit, which controls updates to two or more database at once during an online transaction.
- Firebird 1.5 shifts the source code from C to C++, along with a big cleanup of the code, new memory management improvements and numerous bug fixes. Another big change has been several enhancements to the SQL query optimizer. Users report queries now run 30% to 60% faster, and in some cases even faster.

Speed, simplicity

Users on the Sourceforge.net's Firebird site and other Internet sites report they like the compact size of the database, its support for Java, its speed, its simplicity and its straightforward installation on Win32 computers.

The new release is the foundation for what is expected to be substantial innovations in Version 2.0, especially in performance and security. Users are pushing for better support for symmetrical multiprocessor servers and expanded SQL operations.

Many of these changes have long been standard features of the commercially licensed databases. User application's requirements determine which open source database to use, or even whether to use one at all.

Compiere is an open source ERP/CRM suite, which has stayed in the top 10 list of most downloads for a good part of the past two years at Sourceforge.net, a Web site for open source development projects. There have been more than 630,000 Compiere downloads, according to Jorge Janke, one of the Compiere project administrators.

But the suite is not wedded to an open source database. The Compiere team ran into some limitations in its first effort to make the software work with PostgreSQL, he wrote in an e-mail. MySQL lacked a feature set the developers deemed necessary. The goal now is to make Compiere "database independent," he wrote. ■

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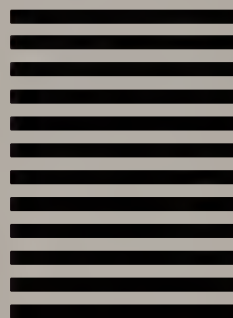
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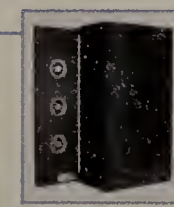
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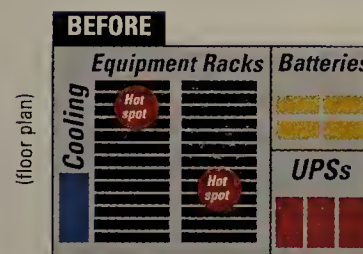
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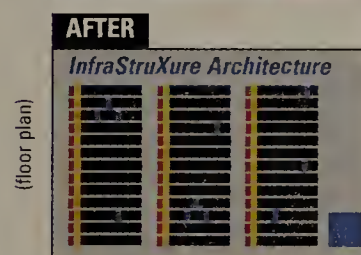
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IPass spreading its Wi-Fi wings

■ BY DENISE PAPPALARDO

Global service provider iPass has more than doubled the reach of its wireless LAN network through an agreement with T-Mobile.

As of last week, iPass Corporate Access customers can connect to their VPN over any of T-Mobile's 4,200 hot spots throughout the U.S. That brings iPass' number of hot spots available to business users up to 7,800 in 24 countries.

IPass and T-Mobile first announced their agreement in December. Since then, iPass has been testing and integrating T-Mobile's hot spots into its access point network.

IPass is aggressively expanding the reach

of its Wi-Fi service, says Anurag Lal, vice president of business development. "We launched the service with about 400 hot spots. . . and now we're at 7,800 with T-Mobile," he says.

The company's Wi-Fi service is part of its iPass Corporate Access offering. It's a remote-access service that spans the world and multiple technologies. While most iPass customers still use its dial-up service, they have the choice of DSL, Wi-Fi or broadband Ethernet access at hotels.

"Customers use the same client software to access their corporate network regardless of access technology or geographic location. We offer robust seamless integration to our clients. We're not a fly-by-night network," Lal says.

While iPass offers an expansive worldwide reach, its network is entirely made up of other carrier's networks tied together by iPass software.

Other service providers such as Boingo Wireless and Gric Communications, exclusively on the Wi-Fi front, also have established aggregator networks, although neither sells directly to businesses. Fiberlink Communications, on the other hand, uses Boingo's network of hot spots to offer an integrated VPN service that's most directly comparable to the iPass offering, says Pyramid Research analyst John Yunker.

Fiberlink and iPass each offers software that lets users easily integrate their VPN client, Yunker says. "Fiberlink has taken the lead with a more user-friendly client, but iPass has made some great strides," he says.

Underwriters Laboratories in Northbrook, Ill., is pleased with the service. About 3,000 of the company's 6,000 employees use the iPass Corporate Access service to connect to their VPN from around the world, says Scott Kinsella, director of corporate IT services at the nonprofit. Under-

writers, an independent product safety testing and certification organization, teamed with iPass about a year ago.

In the past six months the company has aggressively deployed Wi-Fi-ready laptops so users have the choice of connecting via dial-up, DSL or wireless LAN (WLAN) service.

"Only 10% of our users are wirelessly enabled at this time, but we see it as a fast growing service," he says. "In the past it didn't make sense to upgrade all of the laptops [with WLAN modems] because there wasn't much availability." Now Wi-Fi support is a standard component of all new company laptops, he says.

Underwriters used AT&T Global Network services before switching to iPass, Kinsella says. "We're pleased with the change. We have saved hundreds of thousands on cost, and [iPass] provides a much broader footprint," he says. ■

Cost of Wi-Fi

It can be difficult to figure out how much you might pay for the iPass Corporate Access Wi-Fi service. This example might help:

Number of Wi-Fi users	300
Average number of sessions per user, per month	5
Total number of sessions per month	1,500
Average Wi-Fi connection time	38 minutes
Total minutes of use	57,000
Average per-minute price	12 cents
Monthly service fee	\$6,840

SOURCE: IPASS

Short Takes

■ **AT&T** has inked a five-year, \$27 million deal with **The Sports Authority**. The carrier is providing local, long-distance voice, data, video and IP services to the national sporting goods retailer, linking its 385 stores in 45 states. AT&T says The Sports Authority will use its new network infrastructure to support an inventory-control system and disaster-recovery support to all locations. AT&T also announced a three-year, \$3.6 million deal with **CareCore National**, an outpatient diagnostic imaging services organization. AT&T is providing local, long-distance voice, data and IP services to the company's call centers, which support 20 million customers.

■ **Corvis**, the parent company of Broadwing Communications, announced last week that it plans to **acquire** competitive local exchange carrier **Focal Communications** for \$210 million. Focal provides local voice and data services to business users in 24 markets. Corvis plans to integrate Focal's local presence with Broadwing's long-haul data network, thereby reducing Broadwing's dependency on incumbent local carriers in certain markets. Corvis says it expects Focal to report 2003 year-end revenue of about \$320 million.

Hughes pushes satellite broadband standard

■ BY GRANT GROSS

Satellite service provider Hughes Network Systems is throwing its weight behind an open standard used to transmit satellite broadband signals called IP over Satellite. It is an open standard Hughes developed and on which its DirectWay Internet access service is based. The Telecommunications Industry Association also ratified the specification late last year.

According to a white paper Hughes published, the open standard "specifies the layered architecture and protocols for the transmission of IP packets between a central hub station and remote satellite terminals using standard Ku-band . . . geosynchronous satellites."

IPoS is compatible with all IP services such as videoconferencing, VoIP, VPN, Web browsing and Wi-Fi. IPoS is used on about 300,000 satellite terminals that Hughes has sold.

Earlier this month, Hughes announced that it was forming the IPoS Forum to promote the standard's adoption. Company officials say it is important for the satellite industry to encourage development of an open satellite broadband standard.

Most satellite broadband providers have

been using proprietary technology in their satellite systems, says Pradman Kaul, chairman and CEO of Hughes. "This has led to systems that do not talk to each other."

IPoS is not the only broadband satellite standard available. The digital video broadcast — return channel via satellite (DVB-RCS) standard, created through an organization called the DVB Forum, is also an open standard that allows two-way communication with satellites. Hughes officials say DVB-RCS could be developed further, but they promoted IPoS as the only interface specifically designed for efficient delivery of broadband satellite services.

The company says it will license some of its intellectual property related to IPoS royalty-free to other companies working on IPoS-related products. Hughes has lined up support for IPoS from several technology companies, including HP, Intel and Microsoft. No other satellite broadband vendors are on board yet, but Hughes officials expect significant interest in IPoS.

Gross is a correspondent with the IDG News Service's Washington, D.C., bureau.



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EYE ON THE CARRIERS

Johna Till Johnson



Fear not: This industry will bloom yet again

Maybe it's the depressing weather: In much of the U.S., it's gray and dismal, without even a hint of spring. Or maybe it's the drumbeat of IT jobs getting outsourced to India, highlighting the

commoditization of tech skills. Or possibly it's that former WorldCom CEO Bernie Ebbers finally got indicted for fraud — but too late to save the company that he managed to destroy out of misguided ego,

greed and a lust for power.

Whatever it is, I've lately heard several folks voice sentiments of loss and disillusionment.

Researchers who were active in the early days of the IETF tell me they miss the time when six weeks of focused effort could result in standards that made a difference. "What we're pining for is a way to do cool and fun things, to do them relatively quickly and in the way that we feel is best — and then have it change the world," writes one.

A fellow writer confessed disappointment upon learning of Ebbers' indictment: "I expected to feel happy about the fact that justice was finally served — but instead it was just a letdown."

So what's up? Are we collectively under the weather, or is this truly the end of an era? Was there a brief shining "Age of Innocence" when idealistic techies were able to change the world, before greed-heads and hucksters hijacked their ideas for politics and profit? Is that age over for good?

I'll give the time-honored consultant response: Yes and no. Yes, things were different in 1994, back before most politicians or CEOs had heard of the Internet. Techies were able to change the world — and were honored for it. It happened. That age was real.

But no, I don't think this is the end. The wonderful thing about technical innovation is that it's perennial.

Researchers in labs in the U.S. and abroad are working on new technologies that will change the world — again. They're exploring grid computing, virtualization, real-time databases and application communication technologies that are revolutionizing system-to-system communications.

Open source development is coming into its own. And inside corporations, IT executives are brewing up some of the best and most innovative homegrown applications I've seen in a decade.

Yes, the 1980s and 1990s were a rare and special time for computing and communications. But so were the 1970s. And 1960s. And 1950s and Get the picture? Spring always returns — even after the longest winter. While no two springs are ever exactly the same, they all hold the promise of new things unfolding. So don't give in to the winter doldrums — keep your eye on the unfolding next new tech adventure.

A brief correction: In my last column, I wrote that the AT&T Wireless sale would "fatten up AT&T's cash reserves."

AT&T benefits from reclaiming its brand but doesn't get the cash. AT&T Wireless was entirely spun off from AT&T in 2001.

Johnson is president and chief research officer at Nemertes Research, an independent technology research firm. She can be reached at johna@nemertes.com.

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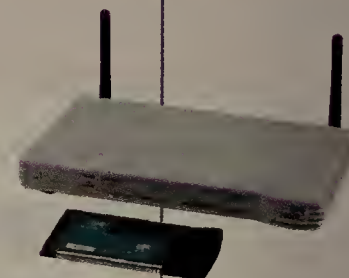
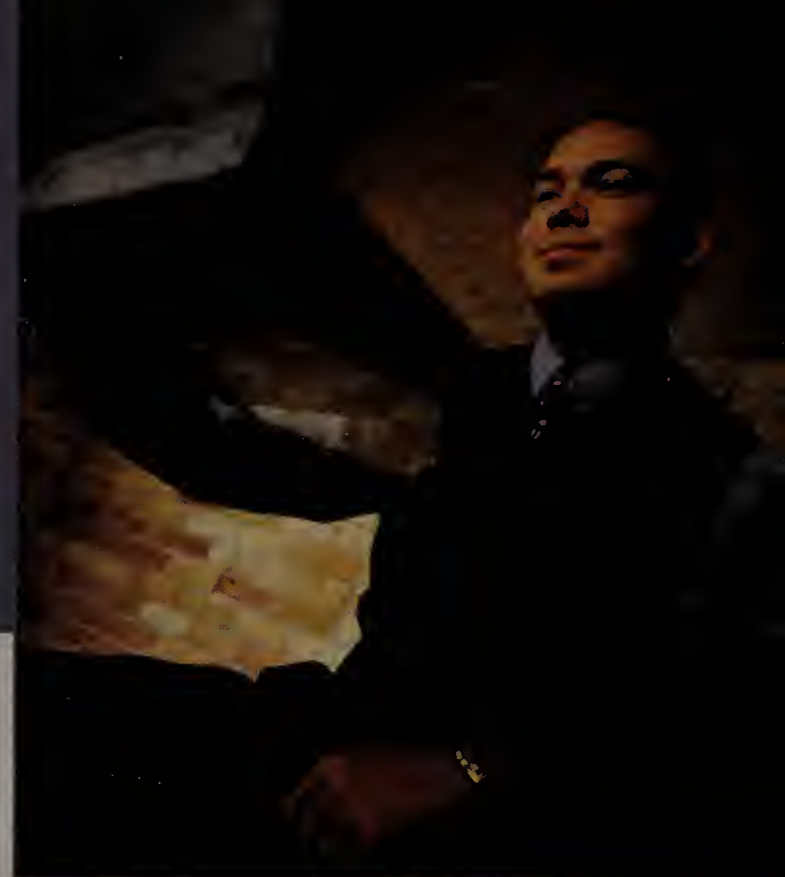
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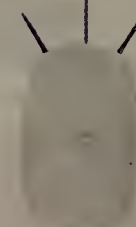
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■ PRODUCTS, SERVICES AND STRATEGIES
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Linksys boosts WLAN speeds

SpeedBooster products call into question competitors' use of proprietary technologies in 802.11 standard.

■ BY TONI KISTNER

Linksys this week announced a line of 802.11g gear that the company says significantly boosts wireless LAN speeds without the use of proprietary technology. SpeedBooster, an extension of the 802.11g standard, increases performance by 35% on a SpeedBooster-only network, and up to 20% when used with standard 802.11g products, Linksys says.

The move is in response to the success small office/home office network rivals

Netgear and D-Link Systems are having with Super G, a wireless chip technology developed by Atheros. Super G uses a proprietary technique called "channel bonding" to achieve 108M bit/sec-rated speeds when used with similar equipment.

Netgear and D-Link started selling Super G gear last year; Netgear says Super G makes up about 30% of its 802.11g equipment sales. Touting a standards-only approach, Linksys has resisted and seen a slight drop in WLAN market share — from 56.59% in December 2003 to 53.13% in January 2004 — to sales of competitor's faster equipment.

Chip vendors such as Atheros and Conexant have developed higher-speed wireless products powered by a mix of standards-based technology and proprietary techniques such as packet bursting, hardware encryption, and most notably, channel bonding. The development is because the IEEE's 802.11n standard, which is expected to get 100M bit/sec speeds, is at least a year away and to meet the performance demands of emerging entertainment networks.

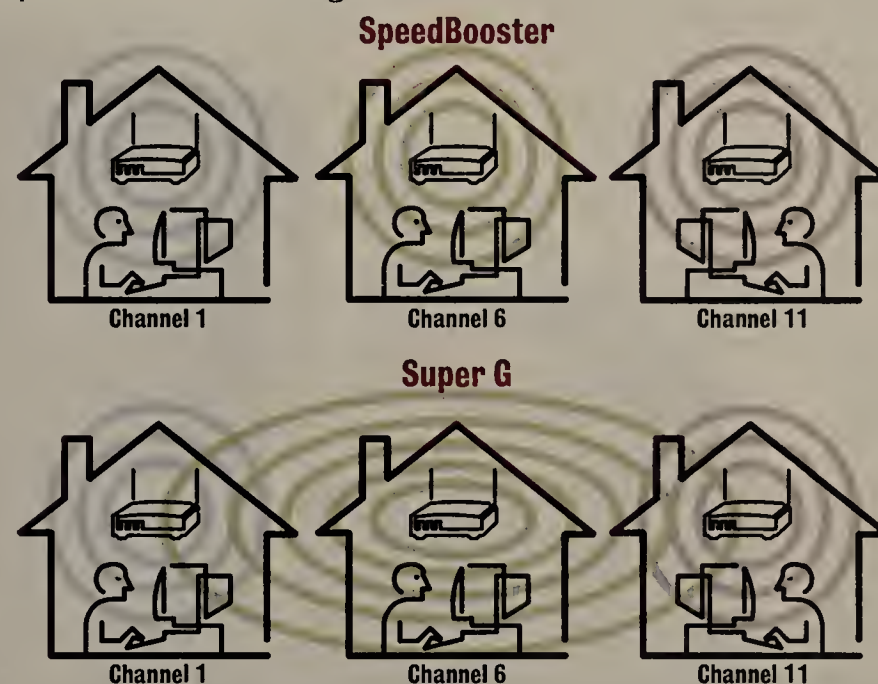
However, such products only achieve higher speeds when they communicate with other similar products, which flies in the face of the Wi-Fi Alliance's push to ensure all Wi-Fi products interoperate. The group has certified products using Super G and others for interoperability, but only in standard 54M bit/sec mode. The Wi-Fi Alliance says it will not certify any vendor's 108 mode or any proprietary mode.

D-Link and Netgear use the same Atheros Super G chip, but whether their products interoperate isn't clear. D-Link says they do. Netgear says its customers say they do but Netgear won't support interoperability with D-Link Super G. Atheros says they interoperate; rival Broadcom, which developed the technology on which SpeedBooster is based, says they do not.

But the biggest problem with Super G isn't the lack of interoperability: It's the use of channel bonding. *Network World* columnist Kevin Tolly of The Tolly Group conducted tests (which Broadband commissioned) in December that showed standard 802.11g networks suffer severe performance degradation when near a Super G network. 802.11g has 11 channels, but only three are non-overlapping, which means you can operate three wireless networks in the same area without interference, so long

Good neighbor, bad neighbor

Because SpeedBooster uses only one channel, three nearby networks can coexist without interference, so long as they each use a different channel, 1, 6 and 11. But if one of the three networks uses Super G, it must use Channel 6 and will hog parts of channels 1 and 11, severely impeding the performance of its neighbors.



as they are set to channels 1, 6 and 11, respectively. To achieve higher throughput, the technique "bonds" together Channel 6, half of Channel 1 and half of Channel 11, degrading nearby networks' performance.

Last week, Tolly's team completed a new round of tests, extending the range between Super G and standard 802.11g networks to 30, 50, 100 and 150 feet. Tolly also tested an Atheros Super G network against an Atheros standard 802.11g network. These tests address claims that the first tests placed the networks too close together and that testing Super G against Broadcom standard 802.11g equipment created a bias.

Although the results won't appear on Tolly's Web site until April, he gave *Network World* a sneak peek. In testing a Netgear Super G network against a Netgear standard 802.11g network positioned 30 feet apart, the mean was 48.5M bit/sec for the Super G network, but 1.4M bit/sec for the standard network (see graphic, page 43).

"The new results don't show anything that contradicts what we found previously," Tolly says. "Even at 30 and 50 feet we found significant interference, which represents what users in condos and apartments could experience through walls, ceilings

and floors. Many lots aren't 50 feet wide, and there are plenty of places where you don't have 50 feet between you and your neighbor's DSL connections."

Tolly's tests also found that placing two Super G networks near each other degrades performance because both must use Channel 6, of particular significance to users who buy a second to expand the network.

Fast and friendly

With its SpeedBooster line, Linksys has incorporated several standards-based, speed-enhancing techniques such as frame bursting that are taken from the Wi-Fi Alliance's upcoming 802.11e standard for quality of service. SpeedBooster products will begin shipping next month. The Wireless-G Router with SpeedBooster will cost \$130; PC Card adapter and PCI card each will cost \$99.

"Because the 2.4-GHz band is so crowded, people need to use all 11 channels to coexist with other wireless networks. And the fact that Super G tramples over every other wireless signal we found is just unacceptable," says Mike Wagner, director of marketing at Linksys.

See Linksys, page 43

Takes

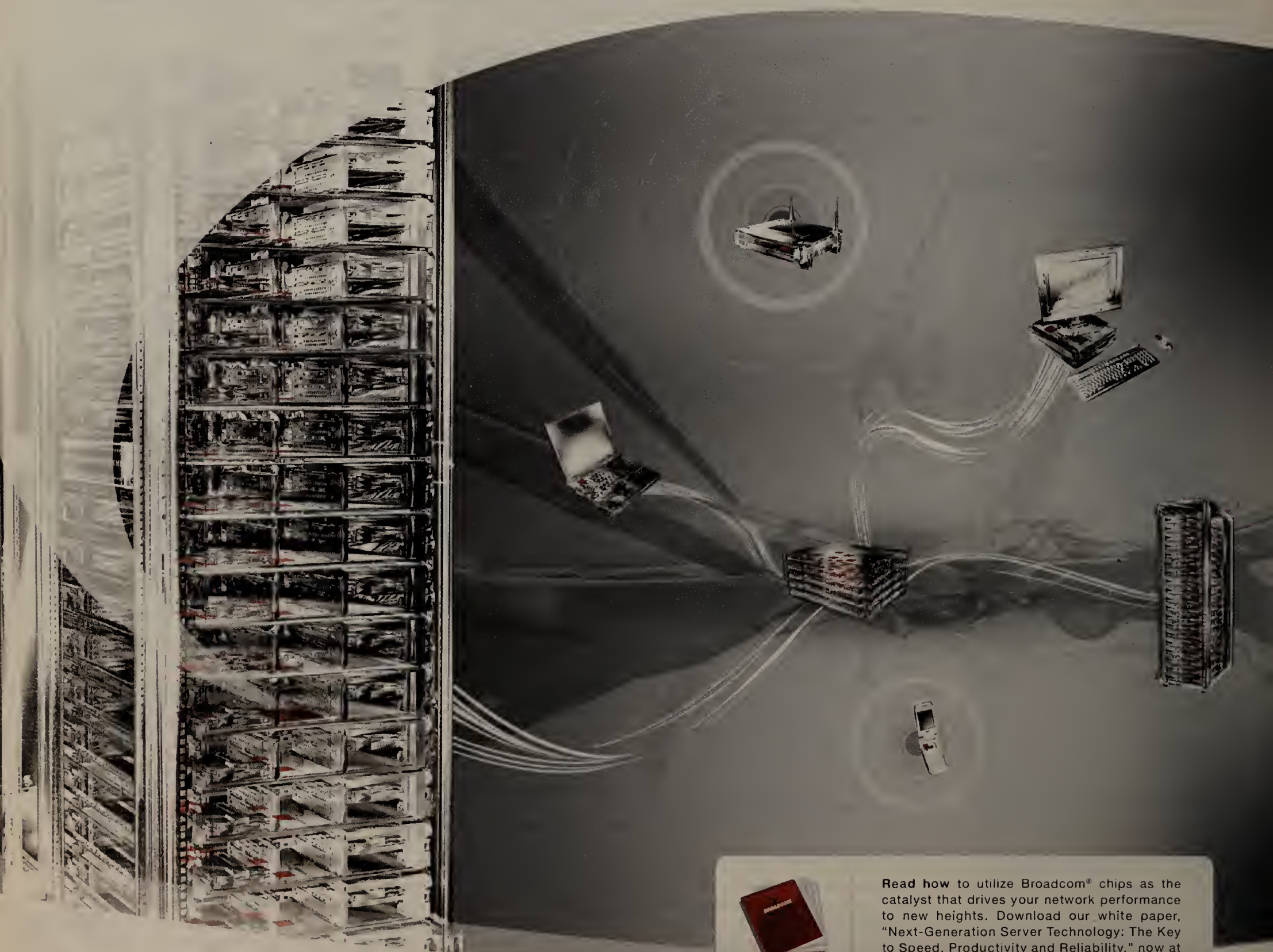
■ **Vonage** recently announced that **Circuit City** would begin selling its broadband telephony starter kit. The Vonage package, essentially a converter box that connects to a broadband router and analog phone line, lets users make local, toll and domestic long-distance telephone calls over the Internet for a flat monthly fee. Standard features include caller ID, call waiting, voice mail, call forwarding and emergency calling. Other features include the ability to check voice mail over the phone and online, and the ability to choose any area code, regardless of location. The starter kit costs \$99; monthly services start at \$15 for residential customers and \$50 for small businesses.

■ **Citrix** recently completed its acquisition of **Expertcity**, announced last December. Citrix paid about \$225 million for the company in an even mix of cash and stock. The acquisition expands Citrix's enterprise server-based remote-access products to include Expertcity's consumer-focused, browser-based GoToMyPC desktop remote-access product and its GoTo-Assist tech support and collaboration product. Expertcity still will operate out of its Santa Barbara, Calif., offices as the Citrix Online Division, with former president Andreas von Blottnitz serving as president.

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¹Source: Worldwide Quarterly Server Tracker, Q2 2003

Linksys

continued from page 41

SpeedBooster is based on a new Broadcom wireless chip technology called Afterburner. Afterburner increases WLAN efficiency by reducing the amount of overhead transmitted with the data packets. 802.11 was developed to transmit data at 1M and 2M bit/sec, which means the protocol spent 80% of the time transmitting data and 20% transmitting overhead. With the higher speeds of 802.11g, the protocol spends more time transmitting overhead packets than data packets. That's why 54M bit/sec-rated speed translates into less than half that in actual data throughput.

Afterburner is an improvement over Broadcom's earlier speed-enhancing chip Express, announced last July. Afterburner increases efficiency even further by shortening the header packets by 50% and by concatenating, or chaining and transmitting five packets together for each header packet sent out.

"What's important for end users is that Afterburner is a friendly overlay on top of 802.11g," says Jeff Abramowitz, senior director of WLAN at Broadcom. He adds that its PC OEM customers — Acer, Apple,

WLAN market growth: 2003

SOHO/home WLAN equipment sales grew an average of 66% last year, compared to the 9% average for enterprise WLAN.

	Position	Year-to-year growth
SOHO:		
Linksys	1	82.5%
D-Link	2	83%
Netgear	3	92.4%
Buffalo	4	32.2
Enterprise:		
Cisco	1	35.6%
Symbol	2	25.4%
Proxim	3	-6.3%
3Com	4	47.2%

SOURCE: SYNERGY GROUP RESEARCH

Dell, Fujitsu, Gateway and HP — are interested in using Afterburner, as are the company's broadband modem manufacturers Efficient and Motorola. Buffalo Technology also says it will ship products

using Afterburner in May.

Smart radios

Although Atheros, D-Link and Netgear continue to defend Super G, all three are working to find ways to decrease interference that channel bonding causes.

D-Link says it will release a firmware update to its Super G router in April that will let the radio automatically detect the presence of another 802.11g network and prevent channel bonding.

Netgear says it is working with Atheros to develop "adaptive network radio" technology, which will let a wireless router check which channels other wireless networks are using and avoid them. According to Netgear's Vivek Patela, senior director of product management/marketing, a client PC using adaptive network radio can wander far enough from the access point that it enters the range of a neighboring network, yet maintain its connection. In other words, the technology lets the router communicate only with its clients, avoiding signals from neighboring networks. Netgear plans to release details next month, but it appears the company will release a new product line, rather than a firmware update existing Super G products.

Atheros, which created the technology, is in a quiet period since going public Feb. 12. However, Colin Macnab, the company's vice president of marketing and business development, says the FCC calls this approach "cognitive radio" and is discussing whether to give "spectral advantages" to companies that use radio spectrum in a more intelligent manner. One such advantage could be being granted an increase in the amount of power products transmit. Today, the power for wireless gear is capped at 1 watt, but most operate at about 100 milliwatts. ■

The Tolly Group's new Super G test results

Distance apart	Mean throughput	
	Super G	Standard 802.11g
30 ft.	48.5M bit/sec	1.4M bit/sec
50 ft.	30.9M bit/sec	5.9M bit/sec
75 ft.	44M bit/sec	15M bit/sec
100 ft.	42M bit/sec	14M bit/sec
150 ft.	53M bit/sec	17M bit/sec

CSMA/CA

802.11b

802.11a

Bluetooth

100%

WEP Security

Firewall Protection

Diverse Hack

Sniffing

Spoofing

Session Hijack

Out-of-Service

Surveillance

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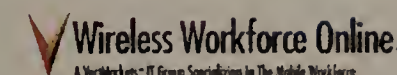


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- LOW LATENCY

IRONWARE SWITCHING AND ROUTING

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PROTOCOL VLANS
- 802.1Q-IN-Q ENCAPSULATION
- 802.1W RAPID SPANNING TREE
- UPGRADEABLE TO MULTIPROTOCOL
AND MULTICAST ROUTING

POWER OVER ETHERNET

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- 15 WATTS OF POWER STANDARD ON
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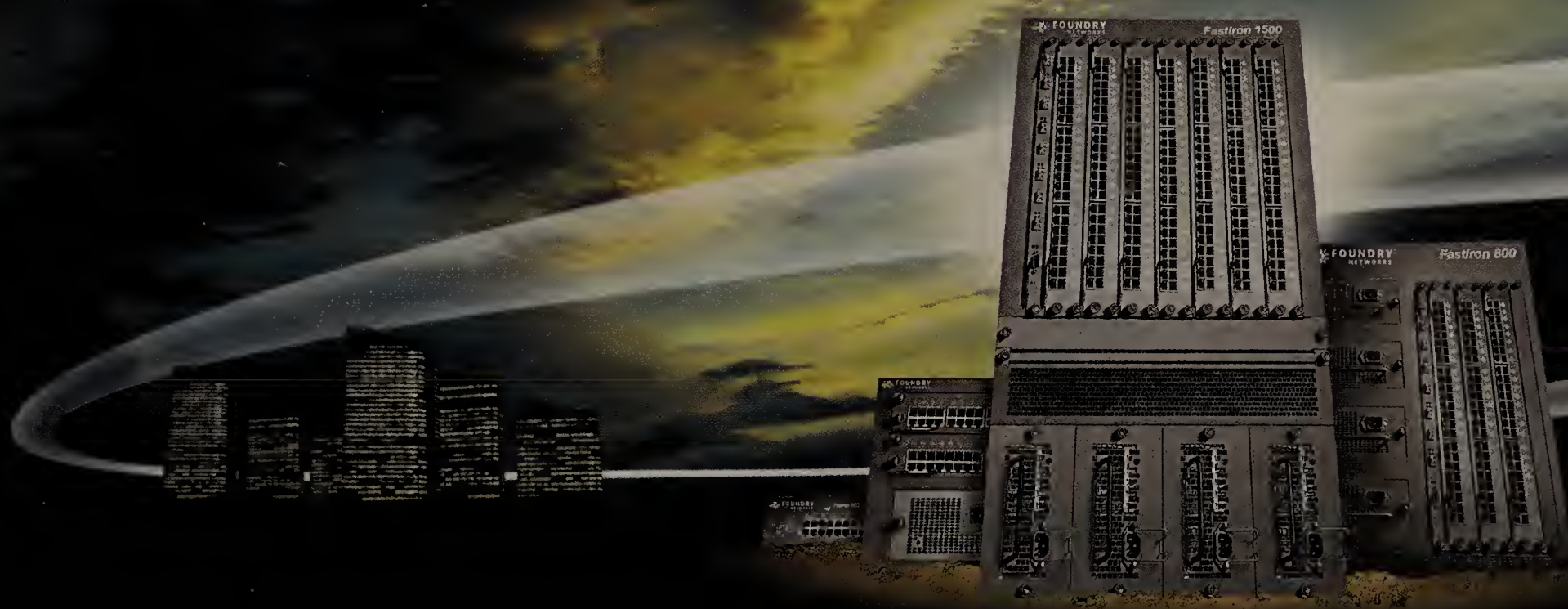
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Technology update

■ AN INSIDE LOOK AT THE TECHNOLOGIES AND STANDARDS SHAPING YOUR NETWORK

Fibre Channel doubles speeds of SANs

■ BY BOB ZONA

The 4G bit/sec Fibre Channel standard boosts the performance of storage-area networks by doubling speed while maintaining backward-compatibility with 1G and 2G bit/sec systems. In addition, 4G bit/sec storage hardware will be available later this year at a cost comparable to today's 2G bit/sec products.

A task group at the Accredited Standards Committee developed the 4G bit/sec Fibre Channel link specifications for backplane connection between disk drives and drive controllers in storage arrays. ANSI approved the specification in 2002 as Fibre Channel-Physical Interfaces (FC-PI). Last May, the Fibre Channel Industry Association recommended 4G bit/sec Fibre Channel for switched fabric networks that connect these storage arrays to servers in the corporate data center.

SANs deployed today run at 1G and 2G bit/sec. As IT managers deal with an ever-increasing deluge of data from emerging bandwidth-intensive graphics and video applications, and new document retention and security requirements, they will need to increase Fibre Channel SAN capacity

without increasing costs.

This can be accomplished by consolidating applications and data on a limited number of more-powerful servers and higher-capacity storage arrays, letting systems do more work without increasing the number of equipment racks that must be managed. This consolidation creates the need to move to higher speeds.

Using Fibre Channel operating at 4G bit/sec to connect disk drives to drive controllers allows increased speed while maintaining compatibility with existing gear. It also supports loop architectures common in 1G and 2G bit/sec systems.

Fibre Channel 4G bit/sec links in the network fabric are a good match with these new 4G bit/sec drive interconnects, because no encoding conversion is needed between the backplane and fabric.

At the server side of the network, fabric host bus adapters provide an interface between the server's internal data bus and the SAN fabric. The trend in server bus architectures is toward higher I/O bandwidth. Buses capable of 4G bit/sec throughput are available, and greater speeds are on the horizon.

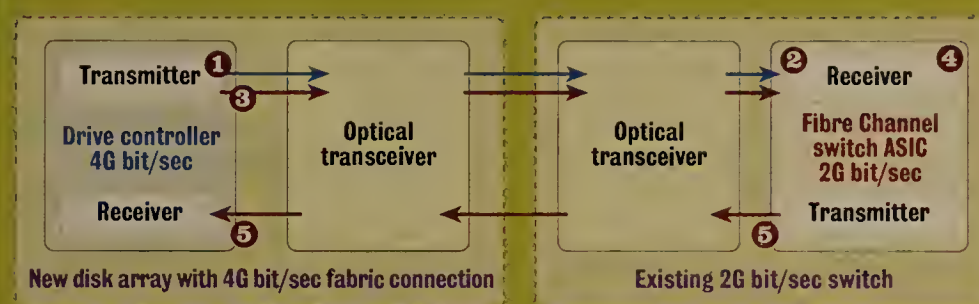
To prevent bottlenecks and reduce latency, the speed of the SAN switch fabric must match disk and server I/O speeds. As more-powerful servers and larger disk arrays move to connection speeds of 4G bit/sec, 4G bit/sec fabrics will be necessary to handle the traffic between these devices.

Systems based on 4G bit/sec Fibre Channel will rate-adjust when connected to 1G and 2G bit/sec systems, letting IT managers make incremental network upgrades while using 1G and 2G bit/sec storage hardware. As the remaining infrastructure is upgraded, the full benefits of a

■ HOW IT WORKS

4G bit/sec Fibre Channel

Organizations can incrementally migrate to 4G bit/sec Fibre Channel SANs because new hardware will rate-negotiate to interoperate with existing 1G and 2G bit/sec systems.



- 1 Drive controller transmits data at its highest rate, 4G bit/sec.
- 2 Switch ASIC cycles its receiver through its valid link speeds, in this case 1G and 2G bit/sec. Link will not close because switch is not capable of 4G bit/sec operation.
- 3 Drive controller reduces transmission rate and sends data at 2G bit/sec.
- 4 Switch ASIC continues to cycle receiver through its valid speeds. At 2G bit/sec, link closes.
- 5 Switch ASIC sends acknowledgement signal to drive controller indicating that link has closed. Link runs at 2G bit/sec.

4G bit/sec system are realized.

Optical transceivers provide the interface between Fibre Channel systems and the optical fibers of the SAN. They represent a significant portion of the total cost of a SAN. Development of 4G bit/sec optical transceivers will not require a change in the semiconductor process technologies used to manufacture the internal components for 2G bit/sec versions, including lasers, laser drivers, PIN receiver diodes, trans-impedance amplifiers and post amplifiers. Therefore, once manufacturing is in full production, 4G bit/sec optical technology will be available at a price

comparable to that of 2G bit/sec Fibre Channel hardware.

Demand for higher bandwidth, compatibility with installed hardware and comparable cost will lead to rapid and widespread adoption of 4G bit/sec Fibre Channel. It will replace 2G bit/sec in the same way 2G bit/sec replaced 1G bit/sec. By 2006, most Fibre Channel hardware will ship with 4G bit/sec interfaces.

Zona is marketing director of the Enterprise Optical Modules Optical Platform Division of Intel. He can be reached at robert.zona@intel.com.

Got great ideas?

■ *Network World* is looking for great ideas for future Tech Updates. If you want to contribute a primer on a specific technology, standard or protocol, contact Amy Schurr, senior managing editor, features (aschurr@nww.com).

Ask Dr. Internet

By Steve Blass

I am testing in a lab where my SmartBits has a public address while my two routers and two PCs are on a private address on two subnets. I can see how the virtual LAN across my two routers handle Differentiated-Service code points and how the routers will apply my access control lists. Can I connect the SmartBits directly to one of my PCs to generate traffic? I have two ports on the SmartBits — can I then connect the two ports to my two PCs to get bidirectional traffic?

You can generate bidirectional traffic across the routers to test the VLAN performance by hanging one PC off each router to be the destination for SmartBits-generated traffic and connecting the two SmartBits ports to the opposite routers and driving traffic both ways through the configuration. You can connect the SmartBits ports directly to a PC using a null-modem (crossover) Ethernet cable, but you probably want to connect the SmartBits to the routers and configure the virtual

transmit engines to send traffic to the PCs across the VLAN routers. To push traffic through the PCs first and then to the VLAN you will need to enable packet forwarding on the PCs and be extremely careful with the route table entries to test the intended traffic paths.

Blass is a network architect at Change@Work in Houston. He can be reached at drinternet@changeatwork.com.

Mid-size businesses can now enjoy enterprise-class data protection options with mid-tier storage



♦ Peter A. Gerr, Research Analyst

Information is a core asset of virtually every commercial business and government agency in today's networked world. Organizations must protect their valuable information assets from loss, security breaches, and planned or unplanned interruptions. IT organizations are challenged to increase service levels to their users groups amid the reality of constrained budgets. IT professionals face two related issues: first how to rapidly recover critical information assets in the event of a system failure or unexpected outage; and second, how to continually improve levels of data protection without additional administrative overhead.

Organizations continue to accumulate data at very high rates and the requirement to protect larger data sets is driving vendors to develop innovative solutions. Snapshot, replication, and point-in-time copy enable users to keep production storage and applications online while performing backups, loading data warehouses, and even mirroring large data sets to remote locations. The ever-increasing pace of business has driven the widespread adoption of such technologies in the enterprise. Until recently, however midrange storage systems offered administrators fewer choices. Now, small-to-medium enterprises (SMEs) and even small-to-medium sized business (SMB) customers can take advantage of new performance and functionality in midtier storage.

This article will explore two of the more innovative advances that provide SMEs and SMBs more rapid data recovery and cost effective replication.

The Changing Landscape of Data Protection

A recent ESG Research report, *The Evolution of Enterprise Data Protection*, underscores the need for more cost-effective, yet robust data protection solutions for both enterprise and mid-tier businesses. 49% of the 222 enterprise and mid-tier respondents in the study stated that their recovery processes are too slow. While time-tested tape storage remains the workhorse of backup and recovery procedures, users are turning to new disk-based solutions that offer better performance, especially for recovery purposes. While 83% of data is backed up to tape today, two years from now, 53% of users' data will be backed up to disk at some point in its lifecycle. Whether to replace a Word document or recovery an entire database of customer contacts after a system failure, rapid recovery solutions are no longer solely within the domain of large enterprises, but are now available to medium and even small businesses. Until recently comprehensive solutions that enable faster

data recovery have been the purview of the largest or most technically astute enterprises. Now SMEs and SMBs are able to enjoy many of the same data protection, disaster recovery, and replication choices previously available only to enterprises. Based on our research, observation, and discussions with vendors and IT professionals, ESG sees a spectrum of data protection/information recovery solutions emerging to enable midrange users to match their data protection requirements budgets to a broader choice of cost-effective solutions.

Asynchronous remote replication migrates to the midrange

For the past two decades, large enterprises have leveraged features such as remote replication and point-in-time snapshot, to protect them from data loss and system failures. Snapshot functionality along with asynchronous replication, once available in only the enterprise-class storage systems, will be available very soon in some midrange storage arrays. Snapshot allows a point-in-time replicas of a primary storage volume to be created and mounted as a standard disk volume. Snapshot is an effective tool when used to create replicas of production volumes to conduct backups without impacting production systems. 60% of mid-tier respondents in ESG's study use snapshot technology to reduce their backup windows. Existing backup/recovery software can backup the replicated volume rather than the source volume, allowing users to protect their valuable data while maintaining productivity.

Synchronous replication provides enterprises a comprehensive means to protect their valuable data, but with trade-offs — synchronous replication remains expensive primarily due to communication line costs and is limited in distance. Synchronous replication virtually eliminates the risk of data loss however.

Asynchronous replication has virtually no distance limitations and allows SMEs and SMBs to design affordable data protection and disaster recovery solutions, when used in conjunction with midrange storage. Asynchronous replication transmits only changed blocks, not every transaction or entire disk volume, significantly reducing the amount of data transferred. Asynchronous replication puts fewer burdens on storage systems and gives mid-size businesses the opportunity to protect critical applications and more of their valuable data. It has three advantages: first, it reduces costs, second, has essentially no distance limitations

and third, has much less performance impact than synchronous replication.

Disk to Disk Backup for Rapid Recovery Now Affordable

Mid-tier arrays using ATA disk drives are driving down the cost to store data and providing more choices to SMB and SME users. While ATA drives are still slower than Fibre Channel drives and not appropriate for all applications, they are often an excellent target for disk backup. Some vendors now offer separate ATA arrays while others enable ATA drives to coexist alongside Fibre Channel drives enabling the use of advanced features and functions across different classes of storage. As a complement to Fibre Channel and SCSI-based enterprise disk arrays, ATA systems allow businesses to store more of their valuable data online. Administrators can implement a disk-based backup scenario today using their existing backup software, right alongside their current tape solution. While recovery from disk can be much faster than from

tape, ESG Research illustrates that recovery from disk can be more successful when compared to recovery from tape. 85% of users reported that 81-100% of disk-based recoveries are successful. That number dipped to 70% for tape-based recoveries. With a broader set of data protection choices, midrange businesses can now explore tiering their storage system assets and information assets as is the trend in the enterprise. Based upon business requirements, the relative value of data, and recovery time or recovery point objectives mid-tier users can now deploy the most appropriate storage solutions and not simply compromise.

Today's real-time business environment places unprecedented pressure on large and small organizations. Migration of enterprise-class functionality and the emergence of cost-saving ATA disks mean that SMBs and SMEs have the same recovery and replication choices as the enterprise—and they have these choices with the robust performance and high availability they expect from their storage. Small-to-medium-sized business looking to protect their growing stores of valuable information should consider the capabilities now available in midrange storage.

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Cascading Style Sheets (5) rollovers!

```
(document.button1.src = button1image
[1].src)">
    <img src = "b1.jpg" name =
"button1" border = "0">
    </a>
</body>
</html>
```

In this example, we set up an array of image objects to hold the various button states. Here we have allocated and initialized images for the onMouseOver and onMouseOut states but we could also add the onMouseDown, onMouseUp and onClick states if we wanted to be really flashy.

In the body of the document we create a button using an image in a link and define the handlers for the events. Because the code is so simple we've put the JavaScript in the arguments for the events. The alternative would have been to declare functions in the head like this:

```
function BtOver() {
    document.button1.src = button1
image[0].src;
}
function BtOut() {
    document.button1.src = button1
image[1].src;
}
```

And then call the event handlers this

way in the body:

```
<a href = "http://www.gibbs.com"
onMouseOver = "BtOver()"
onMouseOut = "BtOut()">
    <img src = "b1.jpg" name = "but-
ton1" border = "0">
</a>
```

Note that the declaration "javascript:void" prevents JavaScript from returning a value. This is actually just for tidiness, as you only need to be mindful of unwanted return values with JavaScript in tags such as hyperlinks, where a returned value would have a side effect. For example:

```
<a href = "javascript:window.open
('http://www.gibbs.com/')">Just some
site.</a>
```

Digging deeper

This JavaScript code opens a new browser window that then loads the specified URL. The side effect is that the code in the first window also returns an object whose type is "window," actually a pointer to the new window. This object is expected to be an object of the type "undefined" (which is not acted on) or an object of the type "string" (to be interpreted as a URL as the parameter of the "href").

In the example above, however, there is

an object, and as it is not an expected object type the window simply will display the obscure message "[object]" — something that is most likely not what you'd want. So using the following code:

```
<a href = "javascript:void(window.
open('http://www.gibbs.com/'))">Just
some site.</a>
```

... would leave the document that launched the new window alone by not returning anything from the function. But we digress ...

The version of the rollover code above is more generic than last week's version, but you could easily improve on it. You could, for instance, create an array of arrays to store all the button images for a page and build new event handlers that take as an argument the ID of the button they are to dynamically modify. We leave this as an exercise for the reader ...

Now consider the following code:

```
<a href = "javascript:void(document.background-
color = "red")">red!</a>
```

What will this code do in the presence of a CSS being applied to the page it is in?

Find out next week. Had enough of CSS yet? Want more? Tell gearhead@gibbs.com.

```
<html>
<head>
    <script language = "JavaScript">
        button1image = new Array()
        button1image[0] = new Image()
        button1image[0].src = "b1over.jpg"
        button1image[1] = new Image()
        button1image[1].src = "b1.jpg"
    </script>
</head>
<body>
    <a href = "http://www.gibbs.com"
onmouseover = "javascript:void
(document.button1.src = button1image
[0].src)"
onmouseout = "javascript:void
```



Cool Tools

Quick takes
on high-tech toys
By Keith Shaw

Removable memory storage for cell phone

SanDisk recently launched its SanDisk T-Flash card, a tiny memory storage card that will be aimed at giving mobile phones portable storage capabilities for digital media such as photos, videos, MP3 music, games, MultiMedia Service messages, e-mail and voice mail.

SanDisk says the card is similar in size and function to embedded flash memory cards, but with the added benefit of being able to be removed and upgraded. The card's size (11mm by 15mm by 0.1mm), is about one-quarter that of other small removable flash cards. It will be able to store subscriber data and settings, so users can transport these settings from one phone to another (similar to Subscriber Identity Module cards, but with additional storage capacity).

The card also can be inserted into a Secure Digital card slot, giving Secure Digital devices the ability to access content on a T-Flash card, SanDisk says.

Motorola announced that its E1000 and A1000 3G-based cell phones, expected later this year,

The tiny SanDisk T-Flash card can be removed from cell phones and upgraded.

will use a 32M-byte T-Flash card. SanDisk says volume production of the cards will begin in the second quarter for OEM customers, priced from \$14 to \$39 in capacities up to 128M bytes. Retail rollouts of the card are expected later in the year as new phones with the T-Flash capabilities are launched.

Fujitsu enhances thin notebook line

Fujitsu Computer Systems recently upgraded its LifeBook S2000 notebook series while maintaining the same price. The notebooks start at about \$1,200 and are aimed at budget-minded mobile workers and students.

They now incorporate the mobile AMD Athlon XP-M 2100+ processor with AMD's PowerNow Technology. The 4.3-pound unit includes a 13.3-inch XGA TFT display, and a modular bay that can hold an optical drive (DVD/CD-RW combination), an extra battery or a "weight saver" that lightens the notebook to 3.85 pounds.

Other features include up to 1G byte of memory, up to a 60G-byte hard drive, Ethernet, modem and optional integrated 802.11b/g wireless LAN connectivity, two USB 2.0 ports, an IEEE 1394 port, and an optional USB-based floppy disk drive. The notebook comes with Windows XP Home or Professional edition.

GigaFast gets into 802.11g game

GigaFast Ethernet has jumped into the 802.11g wireless LAN waters with the WF717-APR, a

54M bit/sec wireless broadband router. The device costs \$90 and is aimed at small companies and home-based users, the company says.

The WF717-APR includes a built-in firewall and 64- and 128-bit Wired Equivalent Privacy encryption. Configuration of the device occurs through a Web browser. WAN support includes static IP, Domain Host Configuration Protocol, Point-to-Point Protocol over Ethernet, Point-to-Point Tunnel Protocol, asymmetric DSL or L2-VPN. More information is available at the company's Web site.

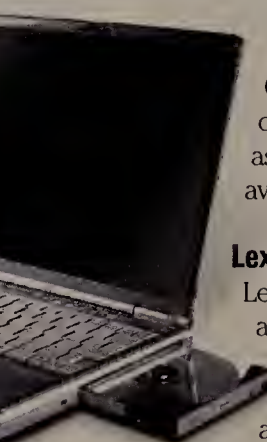
Lexmark launches \$700 color laser printer

Lexmark's new C510 color laser printer will be aimed at small workgroups in large companies and small and midsize businesses.

The C510, which is priced at \$700, includes a 500-MHz processor and 64M bytes of memory, letting it print up to 30 pages per minute in monochrome and eight pages per minute in color. The printer includes 2,400-dot-per-inch resolution, a 780-sheet paper capacity, and high-yield cartridges that allow for up to 6,600 pages of color or 10,000 pages of monochrome before needing to be changed.

The printer also includes Lexmark's Color Care technologies, which lets IT managers monitor color use or make color printing available only to authorized end.

A higher-end model, the C510n (\$1,000), has 128M bytes of additional memory and an internal Ethernet card. The C510dtn model adds a device for two-sided printing and an extra 530-sheet paper tray.



Fujitsu has added features to the LifeBook notebook, aimed at mobile workers, without raising its price.



Lexmark's C510 can print eight pages per minute in color.

Shaw can be reached at kshaw@nww.com.



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EDITORIAL

John Dix

Adding data center capacity block by block

If you're thinking you might reclaim some space in the data center when you migrate to blades, think again. Blade densities are so great they typically overpower data center cooling capabilities.

The average tile in a perforated raised floor can provide enough cooling for up to 3 kilowatts (kW) per equipment rack, more than adequate for a typical rack that uses 1.5kW of power and puts out 1.5kW of heat (about 5 to 6 BTUs), says Neil Rasmussen, CTO and one of the founders of APC, a company best known for its uninterruptible power supply products.

But blade racks can reach more than 10 times the density of traditional systems, so cooling a 15kW blade server rack would require stealing cooling from five to seven surrounding floor tiles. That results in what some corporate IT folks are reportedly calling the Stonehenge look: high-density racks surrounded by empty floor space.

That's one factor that drove APC to develop InfraStruXure High Density, which will be announced next month.

This system builds on APC's existing InfraStruXure line of modular data center rack, power and cooling components by bundling everything together into self-contained cubes, complete with ceilings. "We saw an opportunity to design data centers as a system, to get away from the need to buy a headlight, a fender and the other parts, and then bolt them all together," Rasmussen says.

A 10-foot-by-10-foot InfraStruXure High Density cube can support up to 40kW worth of server, storage and switch/router gear. The cubes come pre-wired and pre-configured, meaning you can go with the basics or create high-availability cubes with redundant everything.

While each cube has to be fed electricity and a means to condition air — either an external condenser or a water source — the cubes are otherwise self-contained and can be dropped in anywhere. They return ambient temperature air so they can be added to data centers without stressing existing resources, and because they contain cooling they can sit on the floor, meaning you can even use them in unused office space.

What's more, the whole system is modular and can be brought in through standard-width doors and regular elevators. "The components snap together," Rasmussen says.

The one apparent drawback to this otherwise well-conceived system is that, once installed, it isn't easy to reconfigure a cube. Rasmussen anticipates that customers will buy them to satisfy specific needs and add more cubes as their needs evolve.

A cube with N+1 UPS and cooling costs about \$90,000, which includes installation.

— John Dix
Editor in chief
jdix@nww.com

Detecting wireless rogues

Regarding the Face-off on whether rogue wireless LANs can be eliminated (www.nwfusion.com, Doc-Finder: 1123): One point that hasn't been made is that even non-wireless sites (at least those that care about network security) ought to be detecting the various rogue connection possibilities. These include rogue connections to your wired network as a bridge, as a network address translation router, as a normal router and accidental association of a user machine to an unintended wireless network. All of the above can happen to sites that don't intentionally provide wireless support. The only way to detect these conditions is to monitor the airwaves throughout your site.

Tony Rall
Senior networker
IBM
San Jose

Hold admins accountable

In his column "Time to wise up about worms" (Doc-Finder: 1124), Joel Snyder makes several observations about how we need to train users not to open attachments and not rely on virus scanners to save us from these viruses. I agree with his suggestions and would like to add one more. In this day and age of e-mail-propagated viruses and worms, why would any e-mail system administrators in their right mind let executable attachments be e-mailed into their systems?

I'm running a virtually antique e-mail and virus product (Exchange 5.5 and Norton Corporate Edition for Exchange Version 7.5), and I still manage to scan every e-mail for executable attachments. If it is executable (.exe, .pif, .bat, .zip and others), it isn't getting through my e-mail system to tempt my users to click on it. I put this into effect after the AnnaK virus got through (before the virus definitions were updated) and haven't gotten a

E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

opinions!

virus or worm since.

But, what if the president of the company wants to send a zipped file to someone on AOL? Easy, rename the file.zip to file.zip and attach a message to rename it back on the other end. The extra step required to rename a file seems to help ensure that the file is from a reputable source.

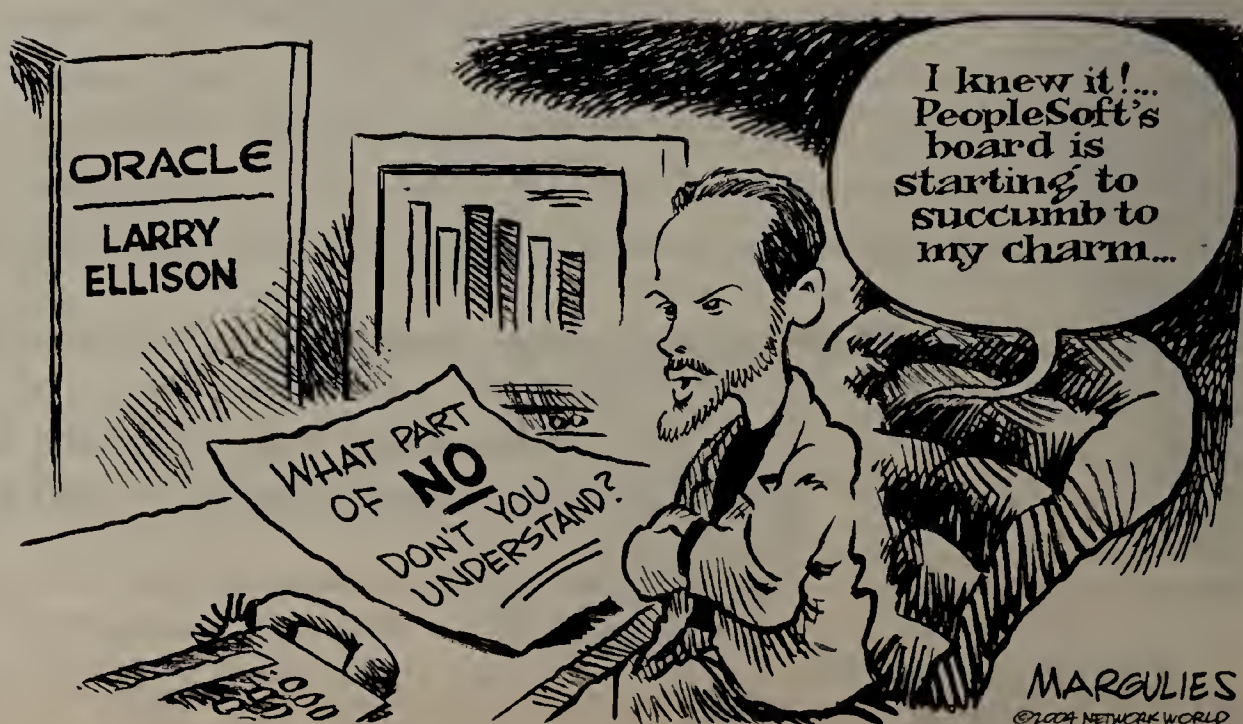
Aaron Peterson
Havre de Grace, Md.

I am sympathetic to Joel Snyder's position about training users not to open dubious attachments, but it's never going to happen. The malware can only be stopped at the choke points controlled by technically competent people — the ISP servers where the malware enters the network and the routers that pass it along. It is at these points that the malware should be identified and deleted. Servers, routers and their communication connections cost big bucks and have knowledgeable staff to run them. The ISP that lets the spammer send a million messages, lets the virus/worm/Trojan horse pass from their customer to the network, lets the port scans through the router and so on — these are the irresponsible people who deserve our ire.

They have the knowledge and the opportunity to make a difference — and they have not acted. With power comes responsibility — and the responsible parties are not the millions of end users. The wrong model (protecting one's own endpoint) was chosen when the malware began — typically because people saw they could make a bigger buck selling millions of software copies (and constant updates) instead of tens or hundreds of thousands. A more efficient model must be adopted before the entire edifice collapses under the weight of greed and evil.

Bruce Bibee
Los Angeles

■ Find out how readers would eliminate spam. See more letters on PAGE 54.



MARGULIES
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THROUGH CHANNELS

Ken Presti

As profit margins on IT products remain slender, some network vendors are attempting to shore up their channel partners by suggesting a stronger focus on professional services. For our purposes here, these services can be defined as everything you buy that doesn't get shrink-wrapped, downloaded or packed in a box. They include the expertise required to figure out the exact upgrade you need, make it work, make it talk to your legacy systems and keep it working.

Encouraging channel partners to focus on professional services makes sense; after all, customizing IT offerings to clients' needs is what they do for a living. From a market standpoint, there is sufficient revenue potential to attract the value-added resellers (VAR)

Wrangling over services revenue

ence in the local services market can reduce competition as a result of the vendor's economies of scale. Also keep in mind that when vendors offer services, they are far less product-agnostic than most VARs' and integrators' offerings tend to be.

Some of the best options let partners resell specific elements of overall vendor service offerings in order to give the channel first pick of the services around which they will build their business. This also is favorable to end users because the channel partner isn't faced with an all-or-nothing proposition, and therefore can focus resources in their chosen areas.

Buyers are advised to ask plenty of questions when purchasing a service contract. If something goes wrong, who will come to the rescue? What are their qualifications? What is the size of their staff in the event that a truck roll is needed? Can they address d by your company? What commitments g service-level agreements or the speed

Buyers are advised to ask plenty of questions when purchasing a service contract.

forward questions and answers, a certain mes into play here. Most people who have any length of time have some idea who emergency. While nobody ever hopes to good networks, such an event often can discerning sales-speak from genuine cus-

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mension to an old rivalry

vices into Web services. ntations seemed to stress the carrier's value ect between broadband voice technologies Protocol and the public switched telephone ould tend to limit SIP to voice applications. on VoIP asks for regulatory relief for calls PSTN calls but carried internally on IP. That isn't visible to users, much less extensible to short, AT&T's voice position is conservative.

Wimmer summarizes MCI's view in what might be the most profound statement any carrier has made on VoIP: "If all SIP and voice over IP are about is a new way to do long-distance voice, why bother?" MCI is excited about SIP as an architecture for collaboration and video. The first of all the major carriers to offer SIP voice, MCI also recently integrated its enterprise VoIP service with its most popular VPN service, in part to get the greatest possible leverage out of customer access costs — among the highest costs MCI and AT&T face. Consistent with its theme of edge convergence, MCI is hoping to converge the customer on IP. That, of course, plays to MCI's strength with the Internet.

Listening to the two carriers, it's hard not to think that AT&T is talking about cost conservation and MCI about opportunity generation. In fairness, MCI has less to worry about regarding cost. About to emerge from Chapter 11 cleansed of debt, MCI can afford to think about developing demand. AT&T must still survive the next two years until it reaches the turnaround point it talked about at the analyst conference.

That's the point where opportunity comes in. Can AT&T be defensive for two years and win over a competitor that's been on the offensive from the day it entered the market? Military strategists say you can't win a war on the defensive. I wonder if AT&T read that. I bet MCI did.

Nolle is president of CIMI Corp., a technology assessment firm in Voorhees, N.J. He can be reached at (856) 753-0004 or tnolle@cimi corp.com.

Listening to the two carriers, it's hard not to think that AT&T is talking about cost conservation and MCI about opportunity generation.

At its analyst conference last month, AT&T said it will converge on one IP backbone to reduce capital and operations costs, and migrate toward higher-layer applications services, where the largest amount of future revenue will be. At about the same time, MCI announced a sweeping modernization of its fiber plant. Jack Wimmer, MCI's vice president of network architecture and advanced technology, says the ultra-long-haul fiber changes will result in significant operations and capital savings, letting the company decommission 45% of its regeneration and optical amplifier locations along current fiber runs and eliminate half its total fiber-network elements while vastly increasing capacity.

Is MCI looking for optical convergence rather than IP convergence? Wimmer says no. MCI operates two parallel IP backbones, one for secure government and enterprise traffic, and another for the Internet. The carrier doesn't see much benefit in converging on one IP core at this point. Wimmer says the next logical target area for convergence is the network's edge, where the largest number of devices and greatest network capital and operations cost are concentrated. MCI wouldn't comment on its next step in modernization, but it seems clear the carrier is working from the edge inward and perceives AT&T is doing the opposite.

In the application networking or higher-layer services area, MCI and AT&T seem more in harmony. MCI's acquisition of Digex was motivated at least in part by the carrier's recognition of the value of application hosting, and MCI is currently running internal trials in the hot new area of Web services. At its analyst conference, AT&T discussed how it is

Readers speak out on spam



Mark Gibbs' Backspin columns "Fighting spam: Theory and practice" (www.nwfusion.com, DocFinder: 1042), "Fighting spam: My theory" (DocFinder: 1043) and "Fighting spam: My theory (Part 2)" (DocFinder: 1044) have provoked an avalanche of reader responses. Here's a sampling of your ideas on how to stop spam.

Spam is unstoppable simply because the sender can remain anonymous. I propose to eliminate anonymity.

If I get e-mail and the sender is known to me, I either accept or reject the message. If the sender is unknown to me, then I reply with instructions for a reply back to me. Spammers who require anonymity will never reply back.

These graylisted entries eventually resolve to either whitelist (successful reply) or blacklist (time limit expired). If and when spammers set up auto-reply servers, they are no longer anonymous and become subject to whatever political solution the world has devised. Additionally, these auto-reply servers will become a known source from which the message is automatically blacklisted.

The problem of forging headers is more problematic but not insurmountable. We extend Simple Mail Transfer Protocol to verify some of what is taken for granted as truthful and further reduce anonymity.

Chris Miller
Staff engineer
InfoGreat
Sacramento, Calif.

Gibbs: *This is essentially what I am suggesting — with sender authentication, forged headers are not an issue.*

There is a simple and rather decentralized approach to limiting (not eliminating) spam. All U.S.-based and U.S.-registered ISPs should be required by law to provide both a whitelist and a blacklist capability to each of their customers. Failure to do so would get the ISP shut down.

Each ISP would then have the option of not only applying Bayesian processing to mark potential spam, but also merging the blacklists constructed by its customers. If more than, say, 80% of an ISP's customers identify a particular e-mail address as a

I give up

About two weeks ago, I threw in the towel on running filters on my mail server. I signed up with a paid spam-filtering service called SpamStops Here.com. For about \$50 per month, it filters and forward all my company's e-mail. All I had to do was make some DNS changes. In the last two weeks, not counting a special quarantine account, I've had exactly two pieces of spam make it to my in-box.

In effect, my company now is paying for e-mail. However, we're saving money because my co-workers and I aren't spending hours each week touching up filters and going through spam.

Gibbs: *ISP-side filtering is an excellent choice. And you get your towel back, too.*

spam source, the ISP doesn't forward e-mail from that address.

But regardless of what ISPs might otherwise do, with a whitelist capability customers can decide to include only the senders (or ISPs) they desire.

James Smith
Greenhill, Ala.

Gibbs: *"By law"...you better have some serious lobbyists to get this one passed.*

Here's an anti-spam idea that I bet would eliminate about 60% to 80% of spam after about six months. The premise: Almost all spam messages attempt to get you to go to a Web site, where they hope you'll buy something, whether it's body-part enhancement junk, a mortgage, prescription meds of dubious provenance, or whatever.

The plan: ISPs and hosting companies agree to a firm policy that, upon their receipt of five verifiable spam complaints (verifiable by inclusion of the spam message containing a link to the Web site), they immediately delete the Web site from their server. (Five complaints instead of one, so people couldn't maliciously get a Web site cancelled by sending a fake complaint.)

Then, the ISP puts the credit card number to which the Web hosting was billed into a blacklist database and never lets someone set up hosting with that credit card number again.

Participating ISPs could query one another's databases when a credit card number is submitted for setting up new hosting. To prevent privacy issues regard-

ing sharing credit card numbers, this would be set up so that the actual number is never accessed from the queried database; it just returns a "yes, it's here" or "no, it isn't."

The ISPs also could blacklist the domain name used by the canceled Web site, forcing the spammers to get a new domain name each time they want to set up a new Web site. Any ISP that declines to participate in this program would have its mail servers black-holed by the ISPs in the program.

What this accomplishes is to make it more difficult for a spammer to stay in operation without jumping through hoops such as using a different credit card number each time it sets up new hosting or going offshore. Lots of spammers would go to offshore hosting, but black-holing the servers of known spam hosts should help deal with that as well.

Why it will never happen: It would take real guts on the part of the ISPs, and they'd have to give up some income currently derived from hosting spam-promoted Web sites. Which is too bad, because it would work.

Take away the profitability of spamming by making it difficult to keep up a spam-promoted Web site, and at least some of the spammers would give up and maybe get an actual job.

Colin Goff
President
Riley communications
Old Saybrook, Conn.

Gibbs: *The problem of spam lies not with those people who have accounts at ISPs but*

with those who use open relays, offshore services and free accounts. And trying to get all ISPs to adhere to the same set of business rules would be like trying to herd cats.

Yes, digital certificates are the answer to most of the problems associated with spam. However, even with digital certs, there are still a few issues:

Legally, how do you go about stopping spammers with digital certs? Would these be "legitimate spammers"?

Operationally, how do you handle the transition from SMTP to SMTP with digital certs?

Developmentally, do you realize how many programs depend on SMTP as a communication method? There are probably hundreds of thousands of products that would need to be updated, indicating that the operational transition period could take many years, if not decades.

Cost-wise, all this work will take money, and are customers willing to foot the bill? The answer is yes as spam reaches critical mass and affects nearly everyone with an e-mail address — but how much are they willing to pay? ISP services are a very competitive market, and companies remain under tight IT budgets, so ISPs will need a marketing strategy that lets them increase prices.

Toby Meehan
Milwaukee

Gibbs: *"Legitimate" spammers would be visible, identifiable and easily blocked while regular spammers would simply be rejected. That's the point. SMTP with digital certificates would be much like good ol' PGP. And SMTP proxies could handle the whole certificate-signing process so that any application that uses the standard would require no modifications. That was easy. Next!*

It seems most people are under the false belief that charging for e-mail will eliminate or seriously reduce spam. I have proof that it will not.

Yesterday I deleted two pieces of spam from my e-mail. I threw away nine pieces of spam (junk mail) from my U.S. Postal Service box. The USPS charges money. It doesn't seem to help.

Charging might eliminate bogus spam, but it will only legitimize e-mail as a form of advertising for business. Our spam will only change from a daily dose of body-part enlargement offers to a daily dose of 4.9% credit card offers, which the CAN-SPAM bill allows.

Michael Miller
Colorado Springs, Colo.

Gibbs: *Right on, brother! This man has heard the word!*



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steep cost: performance degradation. To handle slower clients, 802.11g networks decrease their data rates when an 802.11b client is present, limiting access point throughput to the 11M bit/sec of 802.11b.

There is also some concern that 802.11g won't be as backward-compatible as promised. The 802.11g standard contains a protection mechanism that prevents 802.11g clients from receiving preferential treatment over slower 802.11b clients. The mechanism is bulky, adding overhead to packets, and while 802.11g uses the high-speed OFDM modulation scheme, it must also support the legacy Complementary Code Keying of 802.11b, which further degrades throughput.

To address this problem, several infrastructure vendors have begun offering the Turbo G mode in their 802.11g products. To do this, they use a technique called channel bonding, while also turning off the 802.11b protection mechanism. In essence, Turbo G leaves 802.11b clients out in the cold, while having the unintended effect of generating interference that can affect the performance of nearby access points.

Judging from these problems, you might assume that 802.11g doesn't stand a chance against 802.11a in the long term. "That's not true," DeBeasi says. "If you emphasize coverage over performance and you place a premium on good legacy support, then 802.11g will serve you well."

Insert G here

Certain environments are well suited to 802.11g. DeBeasi's company has been working with a large hotel. Serving a diverse customer base is the hotel's greatest need, and an 802.11b/g infrastructure will cost-effectively accept the broadest range of devices.

"Keep in mind," DeBeasi says, "even though from an infrastructure standpoint you typically want to choose between 802.11a and/or 802.11b/g, clients don't have that problem." With multi-mode capabilities rapidly becoming the norm on the client side, there won't be that many, if any, 802.11a-only devices entering most networks, and, thus, 802.11b/g lets you serve the broadest possible client base.

Other scenarios where 802.11g makes sense are in conference rooms or corporate lobbies. In both situations, it's impossible to know which clients will need access. Low-bandwidth applications are also good candidates for 802.11b/g, such as retail point-of-sale or inventory tracking.

According to Jeff Abramowitz, senior director of marketing for Broadcom's wireless LAN products, 802.11g is driving the Wi-Fi market. "Infrastructure is now being upgraded to 802.11g, and going forward the question becomes whether the capacity gains of 802.11a justify the additional cost." Abramowitz argues that network professionals are familiar with the 2.4-GHz band, they are looking to lower-cost products whenever possible, and they are drawn to the backward-compatibility of 802.11g. ■

THE CASE FOR A: All about performance

The case for 802.11a is pretty straightforward: performance. "Some network managers are beginning to realize that as they deploy more nodes across the enterprise, they will run into capacity constraints," Abramowitz says. "However, with 802.11a-based products being more expensive than the 802.11b/g products, due to lower production volumes, enterprises must decide whether the performance gains justify the added cost." Adding to the cost equation is 802.11a's lesser range — only about 180 feet. The more limited coverage area means that more access points are needed to cover a given space, resulting in additional costs.

Based on OFDM modulation, 802.11a delivers a raw data rate of 54M bit/sec and operates in the relatively clean 5-GHz band.

Significantly more channels are available in 802.11a than 802.11b/g; as many as 12. But the FCC recently opened more spectrum in the 5-GHz band, so the number should jump to more than 20.

The FCC also "harmonized" the unlicensed spectrum in the U.S. with that used overseas. In other words, your 802.11a clients could soon have international interoperability.

"Today, the number of 802.11a units shipping is negligible," Collins says. "That will

change, though, as more large enterprises begin deploying wireless LANs. What will drive the shift towards 802.11a will be raw data capacity issues." Today, enterprise wireless networks are so new that network architects aren't yet encountering capacity issues. Thus, the driving deployment issue today is investment protection, and in that scenario 802.11g wins out.

"That will change as the enterprise market grows," Collins says. "We think 2004 will be the year of WLAN in the enterprise. The enterprise market grew 24% in [the third quarter of] 2003, and that growth will continue over 2004. As the enterprise market grows, you'll see more 802.11a devices, but most of these will actually be multi-mode units. The health-care, educational, retail and warehousing sectors will continue to be strong, driving the overall enterprise market."

DeBeasi has seen a demand for 802.11a from certain market segments. "We're working with a large financial company that has a number of users who frequently download spreadsheets and large documents. In this case, capacity is key, and they are best served by 802.11a," he says. "High-tech and healthcare companies are also good candidates for 802.11a. If you need to exchange massive files or databases over your network, you can only meet those needs with an 802.11a design. ■

THE CASE FOR JUMPING ON THE MULTI-BAND WAGON: Flexibility, future-proofing

If you don't want to be locked into one standard, multi-band solutions can alleviate the problem. A multi-band network supports 802.11b/g simultaneously. Today, multi-band capabilities come at a premium. While this could quickly change as multi-band chips hit large production volumes, the reality today is that they could add as much as 20% or 30% to the cost of your initial deployment.

"At the moment, there is a price premium associated with multi-band products," says Colin Macnab, vice president of marketing at Atheros Communications. "But if you look at a deployment in the enterprise, the issue of access-point price is trivial. The biggest cost for the enterprise comes if they ever have to touch those access points again."

What's more is the fact that spectrum is a finite resource. Macnab argues that even if you chose an 802.11a infrastructure, as your network gets populated 802.11b's three channels in the 2.4-GHz band will be worth their weight in gold.

Even if most users migrate upstream to 802.11a, a company might still need the channels available in the 2.4-GHz band. In a network with centralized control and quality of service, clients with multi-band capabilities could be segregated by task or

user role. For instance, a user needing only e-mail access could be pushed down to the slower 802.11b channels.

According to Scott Lindsay, vice president of marketing at Engim, smart access point software is emerging that has the intelligence to understand what the client base looks like. "Today, you have two choices with single-mode solutions: overdeploy or leave someone out," he says. "Intelligent multi-band solutions eliminate this problem, adjusting to meet the needs of actual users."

These solutions also protect the network from slow clients. "Imagine we're in a conference room with a number of other people. We're all close to the access points, so we're all associating at the maximum data rate," Lindsay says. "What happens, though, when some guy down the hall associates with that same access point? Due to distance, he'll only associate at 1M or 2M bit/sec, and the aggregate capacity of that access point will degrade to the lowest common denominator. With intelligent multi-band functionality, the access point can move that slow user onto his own channel. Then, not only can you meet the needs of more clients, serving both 802.11a and 802.11b/g clients at once, but you protect your bandwidth as well."

According to Engim and Atheros, many

multi-mode chipsets can run in 802.11a mode or 802.11b/g mode, but not both at the same time. You initially can set up the access point to be either 802.11a or 802.11b/g, but to switch from one to another the access points must be reconfigured.

Atheros and Engim argue that true multi-band functionality comes from the ability to simultaneously handle all types of traffic at the same time.

Network design issues

Then there's the matter of network design, which is complicated because 802.11a and 802.11b/g networks require different designs. Access points for 802.11a can be placed closer together than 802.11b/g access points without interfering. "For most customers, what a multi-band infrastructure gives you is the ability to reconfigure the access points via software whenever your needs change," Legra's DeBeasi says. "However, if you want to deploy a true multi-band network, accepting any and all clients, what you really need to do is start with an 802.11a design and then add an 802.11g overlay. A centralized device, such as a wireless LAN switch, can then provide the intelligence to load balance clients from channel to channel and access point to access point to achieve

deterministic performance."

This is a subtlety that often gets lost in the multi-mode discussion. For true multi-band capabilities, you must design two networks. Certain access points will overlap — the only truly multi-band access points in the network — while the rest of the network will essentially function in an either/or, single-band mode.

So, basically, you have three basic choices:

- 802.11b/g design, which provides broad device and network interface card coverage, while currently being the most cost-effective option.

- If you want a high-performance WLAN, 802.11a offers the best possible network capacity.

- The most-expensive option is an 802.11a/b/g multi-band design that supports all available clients and provides high performance. Capital costs are higher for a multi-band network, but it could bring down operational costs over the long haul by saving you the trouble of upgrading down the road.

Vance is a freelance technology writer and consultant who focuses on trends in wireless, next-generation networking and Internet infrastructure. He can be reached at juvance@zoominternet.net.



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New wireless technologies extend connectivity near and far.

It's a Wi Wi World

■ BY NANCY GOHRING

WiMax and ZigBee. No, they're not filling in for Siegfried and Roy on the Vegas strip or replacing Regis and Kelly on television. They're two new wireless technologies that belong on your radar screen.

First off, let's get the definitions straight. WiMax, which stands for Worldwide Interoperability for Microwave Access, is a WAN technology that can beam broadband signals up to 30 miles from a cell tower.

The 802.16 standard, which the WiMax Forum industry group is pushing, is designed to operate in unlicensed or licensed frequencies from 2 GHz to 66 GHz. It's being touted initially as a last-mile alternative to DSL and cable modem. Ultimately, WiMax proponents see it as the basis for ubiquitous, continuous mobile wireless connectivity.

Picture mobile workers with dual WiMax/Wi-Fi cards on their laptops. They connect via WiMax while moving and switch to Wi-Fi at a hot spot or inside a Wi-Fi-enabled building. While WiMax is designed for long-range, high data-rate communications, ZigBee is at the other end of the scale, offering low data rates at short distances.

The ZigBee Alliance is the driving force behind the 802.15.4 technology, which operates in unlicensed spectrum, including the crowded 2.4-GHz band. It can transfer a mere 250K bit/sec of data within a range of 30 to 200 feet.

The big plus for ZigBee is that it requires minimal power, which means a ZigBee-based device could run for as long as five years on a single battery. The Alliance sees ZigBee playing a role in mesh wireless LANs, wireless desktop peripherals and industrial sensing devices that can be monitored wirelessly across a network.

Standards battles

The 802.16 standard aims to initially compete with DSL and cable modem service. It is expected to solve some problems that faced the multipoint multichannel distribution system (MMDS) license holders who tried to build a market in the mid-1990s, and current small operators using 802.11 to bridge the last mile.

From a single base station, an antenna can transmit as much as 75M bit/sec of bandwidth for 2 or 3 miles. Throughput declines as the distance increases, but proponents say a WiMax signal can extend as far as 30 miles, depending on how wide a spectrum band is used.

"The demand for broadband is ever marching onward," says Carlton O'Neal, vice president of marketing for Alvarion, a developer of point-to-multipoint wireless systems. "At the same time, the big carriers say they can do DSL and cable to X percent of their users but they can't do it to all." With 802.16, those operators and others could use licensed or unlicensed bands to reach customers they can't serve with the other technologies.

Industry observers have high hopes for 802.16. A recent study from ABI Research reports that broadband wireless equipment sales should surpass \$1.5 billion by 2008, mostly because of WiMax.

As with any attempt to create a standard, there are hurdles that need to be overcome.

The 802.16 effort is a confusing alphabet soup, but proponents hope to converge various subsets under one all-encompassing WiMax label.

For example, 802.16a added the 2-GHz to 11-GHz bands to the original 802.15 proposal, which spanned frequencies from 10 GHz to 66 GHz. The 802.16a standard was ratified in January 2003, but it doesn't solve one of the main problems — expensive customer installation — that caused the MMDS market to fizzle in the mid-1990s.

MMDS operators spent as much as \$3,000 per customer setting up external antennas on customer homes or offices, says Lindsay Schroth, an analyst with The Yankee Group. "It was so difficult to get a return [on investment] so we saw them pull out of the market," she says.

The next version, 802.16d, eliminates the need for an outdoor antenna and will let vendors build PC Cards to the standard so customers can access service anywhere there's coverage, says Mohammad Shakouri, vice president of business development for Alvarion and a WiMax Forum board member.

The WiMax Forum expects to start certifying 802.16d products in the second half of this year, and live networks might become available at the end of next year, Schroth says.

Not until 802.16e, however, will the standard support handoffs between base stations, making it truly mobile. While the WiMax Forum has more ambitious goals for the standard's completion date, Schroth doesn't expect certified products to hit the market until 2006 or 2007.

Once the 802.16e standard is complete, the lettering system will disappear and all gear will be known just as 802.16, Shakouri says.

Intel says it hopes to see laptops with Wi-Fi and WiMax built in so mobile workers can use WiMax most of the time but switch to local-area Wi-Fi networks where available because they might offer higher capacity.

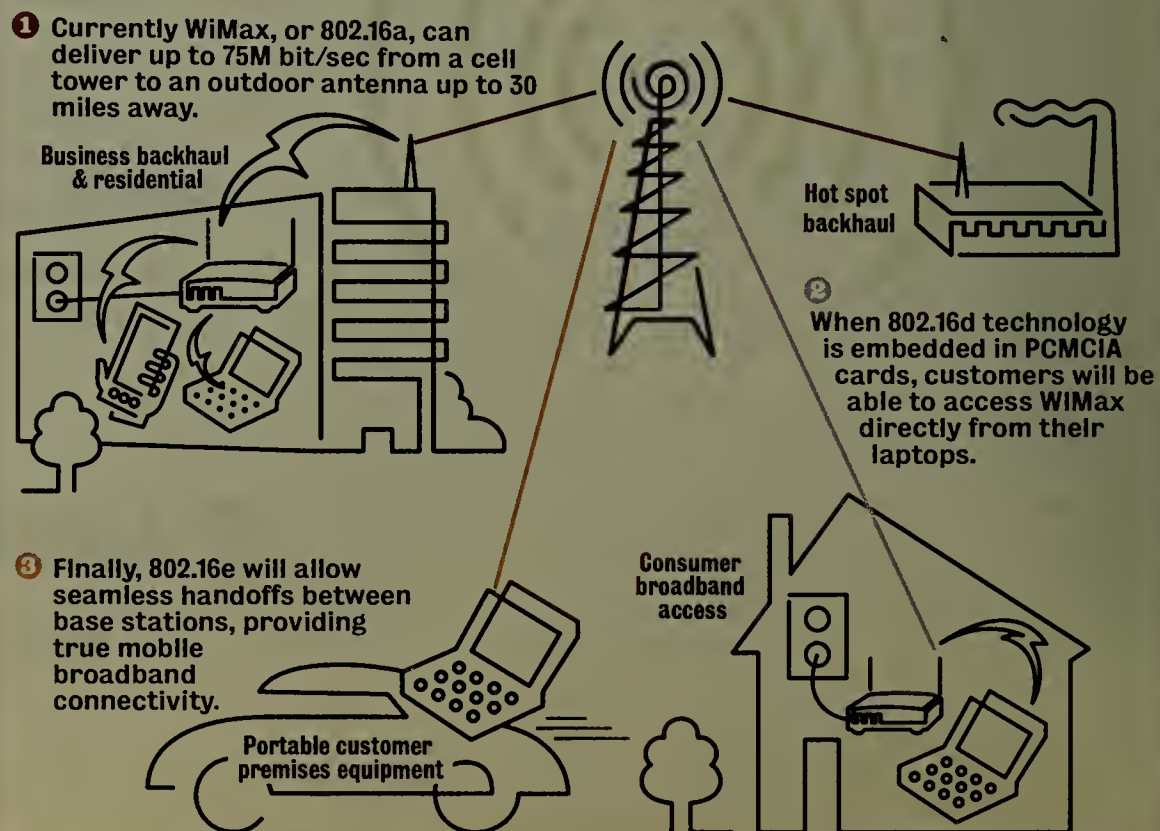
The 802.16 standard effort has significant momentum behind it, partly because of the WiMax Forum and Intel's interest in the standard, but it still faces challenges. Even though AT&T and Covad Communications recently joined the WiMax Forum, no operator officially has signed up to build a network using the technology.

In addition, a somewhat parallel effort is underway in the IEEE, the 802.20 standard, which is creating some confusion in the market. Mobile Broadband Wireless Access, or 802.20, is designed to provide broadband data in a mobile environment. The tech-

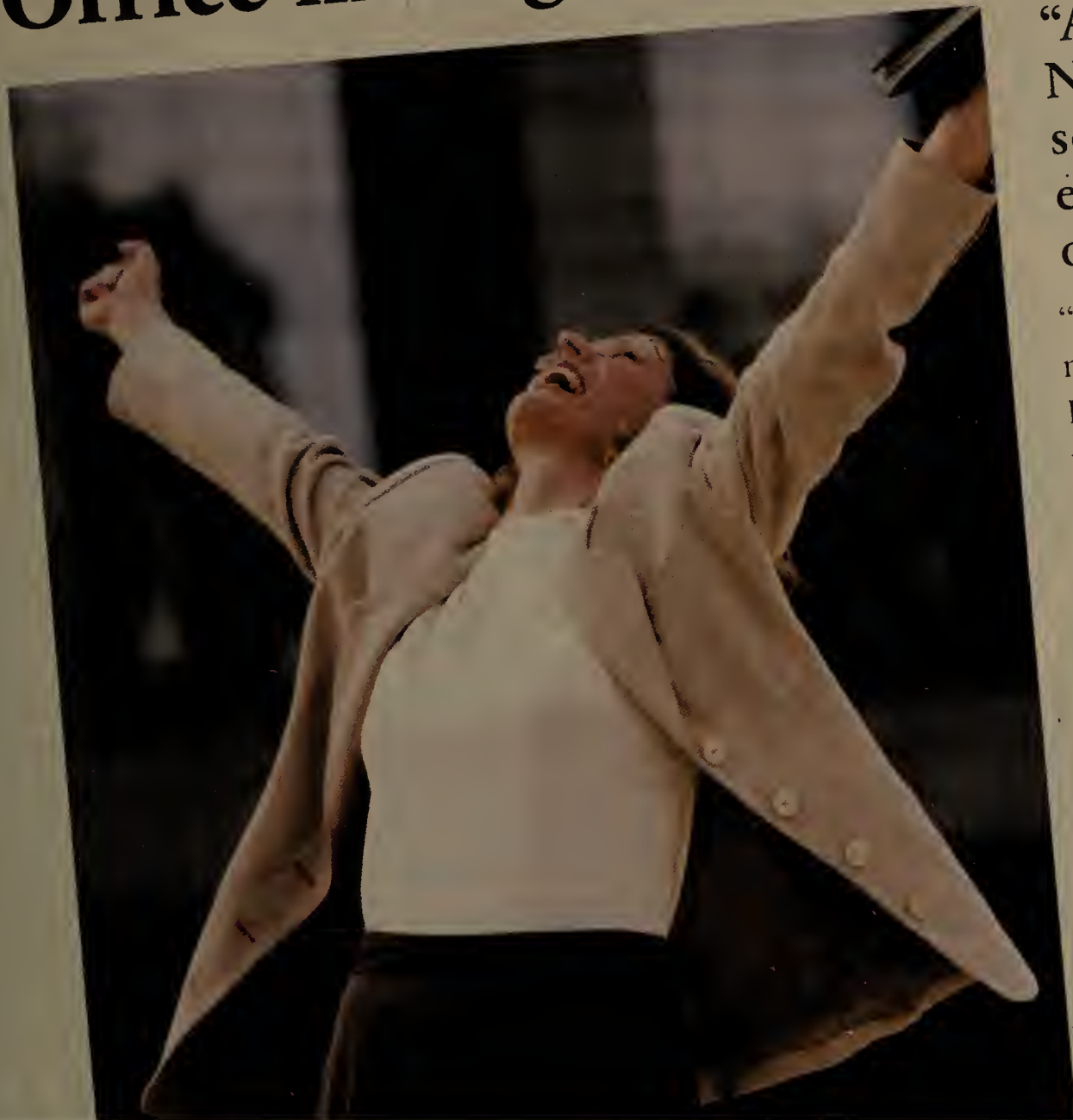
See Wi Wi World, page 62

Wi to the Max

WiMax can be used to deliver broadband to businesses, residences and, ultimately, mobile workers.



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Wi Wi World continued from page 60

nology will operate in the under-3.5-GHz spectrum bands and is supposed to deliver service at up to 155 miles per hour. One could envision 802.20 being used to provide broadband access to mobile users in trains, for example.

"[802.16]e and [802.]20 were born at sort of the same time in an acrimonious process," says Marc Goldberg, CTO of ArrayComm, one of the founders of the 802.20 movement, along with Flarion and others.

The 802.16 proponents point out how far ahead of the development curve they are than 802.20, which is far from being finalized as a standard.

The 802.16 developers might have a leg up in that they've already built the basis for 802.16e, but that can also be a hindrance. "[802.16]e is meant to add mobility to the standard but with backwards-compatibility," Goldberg says.

From laptops to light bulbs

There are a variety of possible uses for ZigBee technology. An 802.15.4 network can be arranged in a number of ways, but one option is a wireless mesh, with gateways scattered where necessary. "In mesh, control is decentralized so there's no single point that all information has to flow through," says Robert Poor, CTO for Ember, a chip and network software maker. "Therefore, gateways can be plunked down anywhere opportunistically."

One of the simplest applications that will employ 802.15.4 is lighting control. Instead of stringing wire behind walls to

on, listening for activity. If the closest lamp to detect communication from the switch isn't the lamp the switch aims to turn on, it still works. "That's relayed through the network to the lamp that needs to go on," Poor says.

Developers argue that building managers can use the technology to significantly cut down on energy costs. In an office, instead of hard-wiring one light switch to a dozen lights that might shine over a dozen cubicles, the lights over each cube could be wirelessly attached to a light switch that each worker can control in each cube. "Right now it's a nightmare to cable each switch into a cube," says Bhupender Virk, president and CEO of CompXs, a developer of system-level 802.15.4 and ultrawideband products.

Building managers also could link certain lights to light sensors so they automatically turn off or dim when the sun is bright. They can control heating and air conditioning units, linking them all to the Internet via connected gateways so that the devices can be controlled remotely.

Industrial businesses could use 802.15.4 to monitor all sorts of equipment, including meters.

Bluetooth couldn't be used for these applications because it doesn't have efficient power consumption and each Bluetooth radio can talk to just seven other radios, Virk says.

But 802.15.4 might have its own set of political troubles slowing it down. Some of the architects of the standard created the ZigBee Alliance to narrow the specification so vendors could build interoperable products. But makers of certain applications might prefer not to be interoperable with other products. "Some manufacturers in industrial process control might not want some other company reading their monitoring system," says Bob Heile, chairman of the ZigBee Alliance.

As a result, 802.15.4 is built so that data from a proprietary system can be passed along a standard ZigBee lighting system, for example, to build the most efficient network. The ZigBee Alliance has set up a program to let independent manufacturers conduct a performance test.

It's not clear how many manufacturers are interested in using the standard approach. "As a good citizen we're working to grow this entire ecosystem the best we can, but frankly the jury is still out on which customers will insist on ZigBee and which may prefer maybe a lighter weight or more custom profile," Poor says.

Gohring is a freelance writer. She can be reached at nangohring@yahoo.com.

EDITOR'S NOTE: The Network World Wireless Wizards are seen exclusively online at www.nwfusion.com, providing answers to readers' wireless LAN questions. Here's some advice from the swamis:

We're debating internally whether to use an IPSec VPN or 802.1x to secure our wireless LAN. What are the advantages and disadvantages of these methods? — Bill, Miami

Vaduvur Bharghavan, Meru Networks: Using 802.1x provides Layer 2 authentication and security, which prevents Layer 2 packets from entering the LAN. This creates a distributed security architecture with the encryption occurring between wireless clients. The access point secures the wireless link, but not the LAN link. This makes it more challenging to deploy a firewall between a LAN and a WLAN, unless you have a centralized WLAN switch to aggregate traffic. A benefit of 802.1x is that authentication is done sooner; thus, Layer 2 packets from unauthorized clients are discarded before entering the LAN.

IPSec provides Layer 3 authentication and security, preventing Layer 3 packets from entering the LAN beyond the VPN server. Using VPN for securing the WLAN enables a centralized security architecture, with encryption occurring between the wireless clients and the VPN server. This centralized approach lets you secure not just the air but also the LAN segment between the access points and the VPN server. It also simplifies deployment of a firewall for WLAN traffic.

The downside of VPN security is the administration of clients. A VPN system needs to be carefully architected to not only support potentially thousands of VPN connections but also to administer potentially thousands of VPN clients. This approach needs to be thought of as a full-blown network upgrade and not just an adjunct to the existing network.

After two years of advancements in wireless security standards efforts, WLAN security has improved dramatically. Most of the arguments against 802.1x are based on perceptions from dated WLAN security information. In reality, the authentication and encryption methodology is nearly a wash between the two methods. So whichever one will make your security group most comfortable is the one to choose.

I noticed the other day that my client card channel setting is set to Channel 3, while the router is set to Channel 6. Aren't the two channels supposed to be the same? Would changing one to a different channel number do anything positive in regard to connection strength or speed? — John, Chicago

Keerti Melkote, Aruba Wireless Networks: Yes. The client and the router/access point should be set to the same channel. There is usually not a choice of channel settings on the clients, because they will look for the best access point on all the available channels and try to connect to it. But if your client is set to Channel 3, you would be wise to set it to 6 in this case. The specific choice of channel depends on how much interference you see on different channels. If you find there are other access points in your neighborhood (an increasingly common problem), you would be wise to choose a channel that is relatively free. Be careful to set the channel to 1, 6 or 11 if you are in the 2.4-GHz band because these are considered the non-overlapping channels to use in 802.11b/g. If you set it to something in between these three, you risk affecting normal operations of your network and those of your neighbors.

My wireless connection drops whenever my neighbor turns on his wireless network. To recover from this, I need to shut the power off to my computer, then turn it back on. When I check the configuration of my wireless board, it looks like my connection has lost its pass-phrase for the Wi-Fi Protected Access-Temporal Key Integrity Protocol setting? Any suggestions? — Joseph, Charlotte, N.C.

Dan Simone, Trapeze Networks: A possible culprit is that you and your neighbor are using the same default Service Set Identifier (SSID) name and channel, so whenever your neighbor turns his network on, your wireless client attempts to associate with his access point and fails. First, make sure you've changed the default SSID and channel on your own access point. If it's 802.11b, pick a channel (choose 1, 6 or 11) that is the farthest away from your neighbor's. By assigning a unique name to your access point and listing that SSID as a preferred one, your client should stay associated with your home network.

Other possibilities include the WLAN network interface card or its drivers. Because Wi-Fi Protected Access is relatively new, make sure your access point and your client are running the latest drivers (and getting your neighbor to do the same is always good, too).

The demand for broadband is ever marching onward."

CARLTON O'NEAL,
Vice president of marketing, Alvarion

connect a switch to a light, an 802.15.4 radio in a battery-powered light switch could communicate with a radio on a light bulb in a fixture. A division of Philips Electronics is building 802.15.4 chips into certain types of lights.

The efficient power consumption of the technology means that switches, with their limited battery power, can sleep most of the time. They only turn on when switched, which wakes up the radio long enough for it to communicate with the nearest lamp. The lamp is plugged into a power source so the radio on the light bulb could be always

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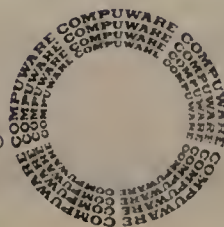
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An invisible fence to keep attack dogs away from your WLAN.

Newbury Networks' WiFi Watchdog

■ BY TOM HENDERSON, NETWORK WORLD LAB ALLIANCE

One of the biggest Wi-Fi security fears for network professionals is the “van in the parking lot” scenario, in which an intruder breaks into the network from outside the company’s walls.

Newbury Networks tackles this problem with WiFi Watchdog, which uses location-based technology to let administrators set up physical borders for the wireless LAN (WLAN). If a user is inside the “border,” connections are allowed. Anywhere outside the network, connections are denied, even if the wireless signal is present. The system also detects rogue access points and has other secu-

urity features to help protect the WLAN.

We recently tested the WiFi Watchdog system and found that while it has an arduous installation process, it eventually pays off with very good results. WiFi Watchdog won’t replace wireline security or other network defenses, but it can be a good component as part of a secure wireless network. WiFi Watchdog overlays existing and compatible (meaning access points must be on its long approved list) WLAN infrastructure. It doesn’t optimize infrastructure in the way that homogeneous switched or other types of WLAN equipment does. Rather, it’s an authenticator/de-authenticator with strong location-based smarts.

How the system works

WiFi Watchdog is a system of passive sensors that use patented methods to locate wireless 802.11b/g users inside an administrator-defined physical geography. Watchdog is used as an overlay to an existing Wi-Fi network that has access points that can authenticate through the RADIUS protocol.

Users within the physical Watchdog boundaries are authenticated through a Newbury-provided RADIUS server and RADIUS-compatible access points. An administrative system (a dedicated Windows 2000/XP PC is suggested) tracks user location and allows authentication via RADIUS following a procedure that the Watchdog application manages.

Watchdog sensors (called LocalePoints) are passive 802.11 access points that add to the intelligence that physical training gains — you need to “walk the dog” around the perimeters of an installation so the sensors become familiar with the geometry of the wireless layout. The LocalePoints then triangulate clients and access points, establish a relative

location, and match the location against a database to continue authentication or remove it. In practical use, physical location tracking will prevent a number of common attacks, but it cannot protect against wireline attacks. Additionally, the Watchdog system currently only supports 802.11b/g systems, although 802.11a monitoring might be added soon, Newbury says.

Dancing through installation

The location-training process requires walking around with a working Wi-Fi device and pirouetting (making a 360-degree rotation) so the LocalePoints can learn specific location characteristics. A large sampling is not necessary; just enough to establish boundaries, including ingress/egress points and other boundaries where Watchdog can draw “authentication lines.” This information is used to plot user movements and rogue detection points on a user-defined layout map.

Before you do this, though, there is software installation to overcome. We found that Watchdog needs to be installed on an otherwise pristine platform, because it required very specific versions of MySQL and Sun’s Java software developers kit. The wide compatibility of these two products lets these devices be installed on a number of platforms, including Windows 2000 and above (we used XP), Linux 2.4 and above (we used 2.4.7), and Sun Solaris (we didn’t try Solaris or Mac OS/X 10.3).

The LocalePoints are highly modified Cisco/Linksys access points, initially configured on the same logical IP subnet as the WiFi Watchdog Management AP — and the MySQL-Java SDK combination.

We had difficulty configuring the LocalePoints with the Watchdog-bundled Windows-based SensorManager. Part of the application should update the LocalePoint with its IP information and

WLAN scanning information, and we found that at times it didn’t.

After the LocalePoints are discovered and configured, the Watchdog Web-based application manages wireless devices, users and the like. The application runs as a service on Windows and has an “.initrc-launched” application on Linux, both with MySQL.

Watchdog defines physical geography as Zones that contain Locales and areas are either inside or outside a Locale. The sequence of events required to get good location data mandates that Locales are defined, installed as Zones within an on-screen, two-dimensional layout.

Signatures or measurements between two locales are taken, and physical walkabout is required with a Watchdog feature called the Predictor. Signatures then are bound to the locales. Measurements also are taken at transition points between locales, so the inside/outside signatures can be determined.

Once the setup is complete, there’s the matter of taking discovered devices and putting them into groups for administrative purposes. Watchdog does not integrate with directory services, so users and group information must either be imported or entered manually.

The bite of Watchdog

We tried to attack the Watchdog system in two common ways: testing its location-based authentication system and trying common spoofing/cracking attempts.

Location-based authentication in both test-

ing layouts was strong. When we went out the door, it took from a few to 20 seconds before Watchdog would cut us off. We took 20 measurements to train Watchdog where inside and outside were, and paid special attention to common demarcation points — doorways — and we were rewarded with consistent service.

We also made signatures at various

See Watchdog, page 66

Net Results

WiFi Watchdog

OVERALL RATING

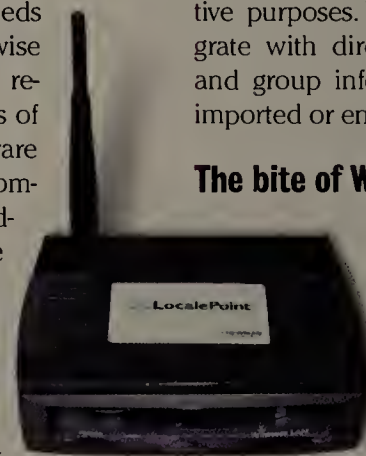
4.13

Company: Newbury Networks
Price: Network base license: \$9,995;
LocalePoints: \$1,000 for four
Annual support
/maintenance: \$2,500 **Total for pilot/**
departmental/minimum system:
\$14,995. **Enterprise system license:**
\$39,995; **LocalePoints:** \$12,500 for 50
Annual support/
maintenance: \$10,500; **Total for**
enterprise system: \$62,995. **Pro:**
Excellent location-based authentication
and overlay for 802.11b/g networks.
Cons: Doesn’t include access
points/access-point cost(s); a few bugs,
intricate installation; no 802.11a.

The breakdown

Installation 25%	2.5
Admin/Management 25%	3.5
Security 25%	4.0
Documentation/Support 25%	3.5
TOTAL SCORE	4.13

Overall Verdict: Excellent location-based authentication and overlay for 802.11b/g networks. Cons: Doesn't include access points/access-point cost(s); a few bugs, intricate installation; no 802.11a.



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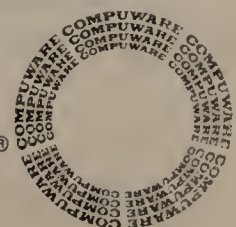
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Watchdog

continued from page 64

points outside the layout perimeter and thwarted the "van in the parking lot" spoof. Indeed, we found that if we went upstairs and downstairs from our two layouts and made signatures there, we could prevent

unauthorized logons. This means that high-density Wi-Fi environments can be protected in a 3-D air space.

We also tried man-in-the-middle attacks (attempts to hijack an existing association to an access point by using a client) using spoofed media access control addresses and "stolen" Wired Equivalent Privacy keys.

Again, location-based and signature information was used to authorize the correct device. Ad hoc mode devices also could be readily identified, and once again alarms were sent correctly.

It was possible to forge access-point credentials, shut off an access point and substitute it with a like-model access point, an event that properly generated an alarm no matter how fast we switched in the substitute access point. This disappearance from the radar could let an intruder substitute equipment that might enable a wireline connection (such as an Ethernet port on a wireless router). Wireless connection attempts through the forged access point still would be detected and not authenticated through RADIUS, however. Because WiFi Watchdog doesn't cover wireline access (although it certainly can be controlled in other ways), such breaches could open uncontrolled, albeit wireline, access.

Downsides

The test LocalePoints that Newbury sent us weren't quite finished, but were usable. The default system configuration permits the LocalePoints to probe the network that it's on by sending port probes to the wireline broadcast addresses. This will set off intrusion-detection systems and firewall applications as various kinds of Trojan attacks. This feature fortunately can be turned off.

The SNMP traps Watchdog sends also must use the SNMP community name public, despite user SNMP community name entry options. As the use of the SNMP community name "public" has known security problems, this is a moderate security flaw for a product otherwise strongly focused on security.

Finally, Watchdog takes a good deal of threading into an installation to become useful. The target user will be someone familiar with several facets of system administration, and you'll need a mid-level technical staffer to sew together everything.

But when sewn correctly, Watchdog should prove difficult to defeat. The correct infrastructure is required to make it work, and the Watchdog must be trained and set up correctly. The payoff comes when you walk out a door and watch your FTP session cut off in midstream as you become de-authenticated. Our unscientific location-based accuracy testing found that Watchdog is accurate to about 5 feet.

Henderson is principal researcher and managing director of ExtremeLabs of Indianapolis. He can be reached at thenderson@extremelabs.com.

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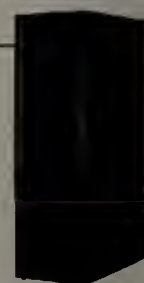
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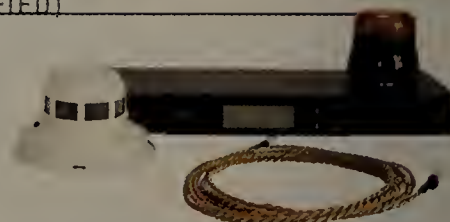
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Encryption restrictions

Regulations regarding the import and export of encryption products affect buying decisions worldwide.

■ BY ELLEN MESSMER

Encryption is subject to a web of regulations around the world because nations view encryption as “dual-use technology” that has military and commercial value. To varying degrees, they set restrictions on import, export and use.

Network managers who want to use encryption methods for ensuring voice and data secrecy across global operations must learn the rules that prevail where they intend to conduct business — lest they be in for a rude surprise in countries where encryption use is still closely controlled by the state. Many countries are tougher than the U.S. on what they let corporations do.

“We have part of our business in Beijing,” says Bernie Cowens, vice president for security services at encryption vendor Rainbow Technologies. “If you encrypt data in China, you have to provide the Chinese government the ability to access the keys. By this regulation, the Chinese should be able to get access to [Secure Sockets Layer]-encrypted traffic, too.”

The result is that businesses — including Rainbow — tend not to use encryption in China, Cowens says.

“Every country has its own rules,” says David Addis, attorney with law firm Covington & Burling in Washington, D.C. “China has restrictions on the import and use of encryption, and so do Russia and Israel.”

Complications with China

Chinese government officials have had an ongoing dialogue about encryption with foreign corporations doing business there. According to attorneys familiar with the matter, Chinese officials say the encryption restrictions are aimed at Chinese citizens, not foreign corporations. However, Addis says companies can expect the Chinese government to ask for details about the encryption they’re using — in addition to requiring them to appoint an “encryption contact” who will give the government the encryption keys when asked.

“China is the big problem area now,” confirms Stewart Baker, attorney at law firm Steptoe & Johnson in Washington, D.C. “China really has an enthusiasm for regulation and standardization that is unmatched anywhere else in the world.”

Baker said it appears likely that by June all businesses in China using wireless LANs will be required to use the Chinese WLAN Authentication and Privacy Infrastructure (WAPI) standard if they want to encrypt WLAN traffic. WAPI, which has become a point of trade friction between the U.S. and China, “seems to be an effort to drive industrial policy,” he says.

That has many network vendors concerned, particularly because the Chinese government wants to compel foreign manufacturers to license the WAPI protocol technology from designated Chinese manufacturers. That would force foreign manufacturers into a new kind of dependency and close contact with their Chinese competitors to gain use of WAPI.

“We’re just going to have to see how this turns out,” said Jeff Platon, a marketing director for Cisco who tracks the U.S.-Chinese government trade negotiations. Cisco sells WLAN equipment to the Chinese government but is not eager to work closely with a competitor such as Huawei Technologies, which is one of the approximately dozen Chinese firms that will have access to WAPI.

Other areas of the world also remain problematic in terms of encryption use.

In Russia, the Federal Agency of Governmental Communications and Information is the source for regulations requiring users to register to approve encryption. In Russia, the interpretation of the rules seem to vary according to which government official you contact, Baker says.

Addis also says encryption regulations are often not “transparent” around the world — a polite way to say that governments might not exactly spell things out clearly.

“Rules are often hard to find and hard to follow,” says Bruce Schneier, an encryption expert and founder of managed security provider Counterpane. The underlying reason, he maintains, is “governments want people

not to do anything.”

The international trade accord called the Wassenaar Arrangement was hammered out five years ago by 33 countries to clarify the commercial exchange of dual-use goods and technologies, including encryption between participants. While Wassenaar is intended to harmonize export rules by the 33 participants, it’s what each nation spells out in its own rules that ultimately counts.

Robert Lane, vice president of product management at AEP Systems, a U.K. maker of SSL VPN and other encryption-based products, says it’s getting harder to export to countries that aren’t part of Wassenaar, where approval on a case-by-case basis still might be needed.

Getting export licenses for customers in Malaysia and the Middle East is coming more slowly as worries about terrorism have risen since the Sept. 11 attacks, Lane notes. “The attitude has changed quite a lot after 9/11. There’s been a subtle hard-



“China really has an enthusiasm for regulation and standardization that is unmatched anywhere else in the world.”

Stewart Baker

Attorney, Steptoe & Johnson

ening of attitudes to export of crypto,” he says.

The U.K. government’s Department of Trade and Industry tends to look hard at certain types of companies — particularly start-ups or online gambling — that want to use cryptography. In some cases, AEP won’t dedicate resources to apply for certain licenses because it’s clear they won’t be approved. In general, AEP shares information about upcoming products with the government agency in order to understand the export implications they might have.

In the U.S., the Commerce Department’s Bureau of Industry and Security has a list of forbidden countries that includes Iran, Cuba and Libya, where U.S. export of cryptography technology is completely prohibited. “There are still embargoed countries, and the list, now at 12 countries, changes biannually,” says Neville Pattinson, director of business and development technology at Axalto, the Schlumberger company that makes smart cards. ■

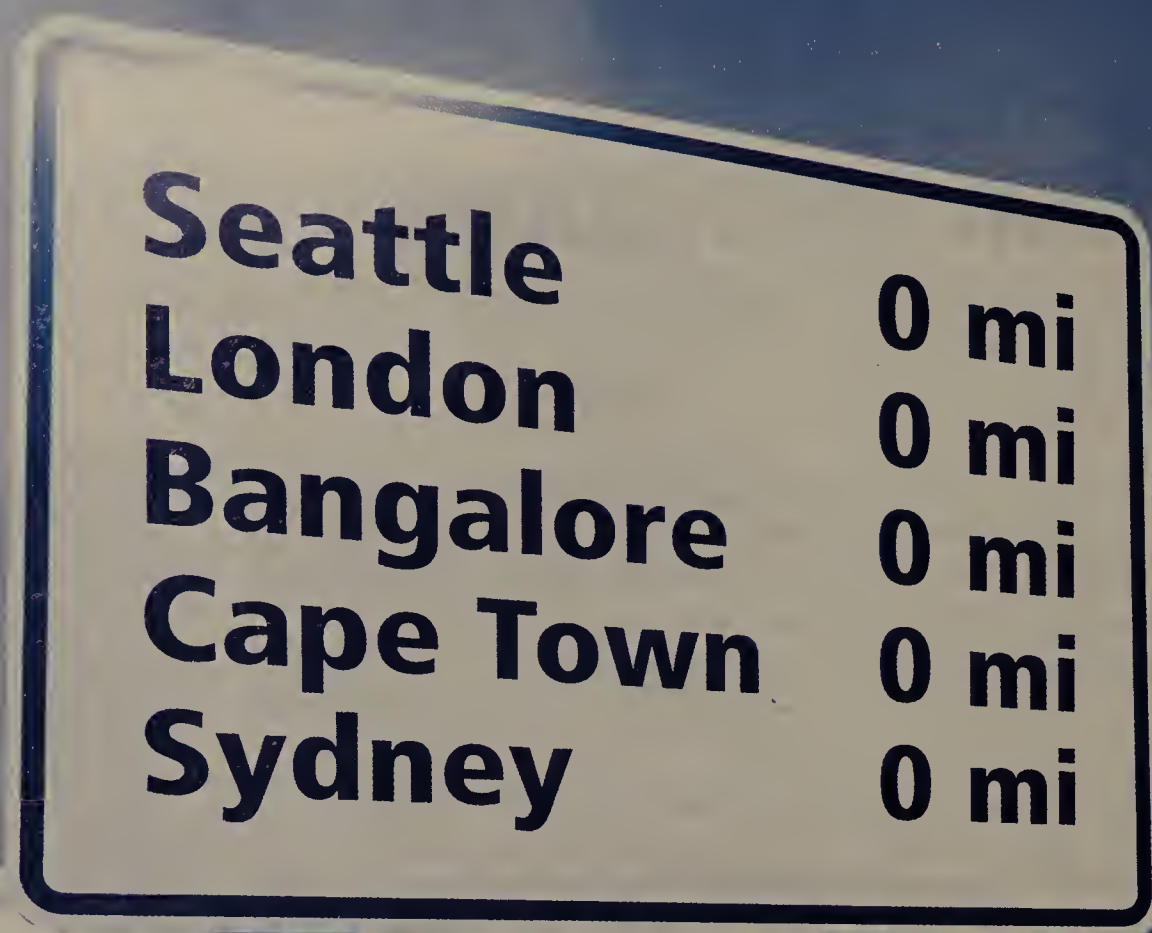


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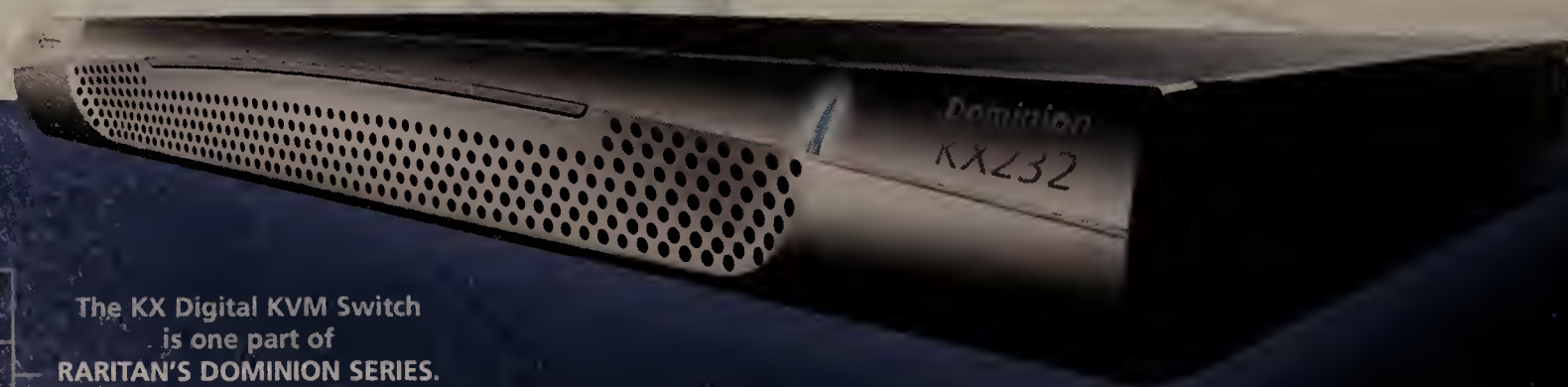
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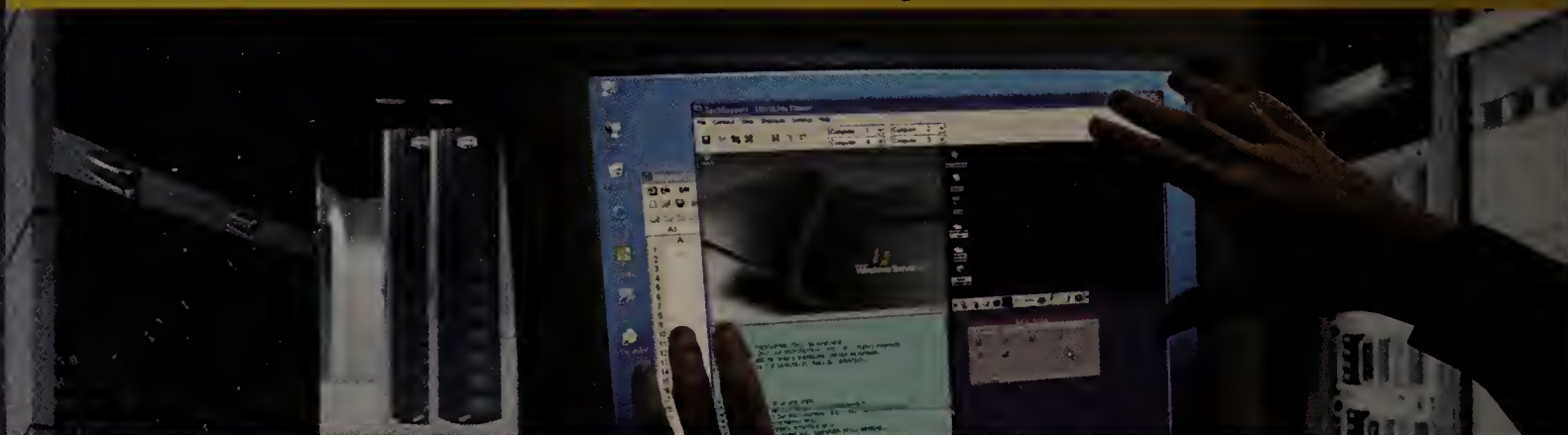
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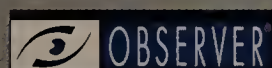
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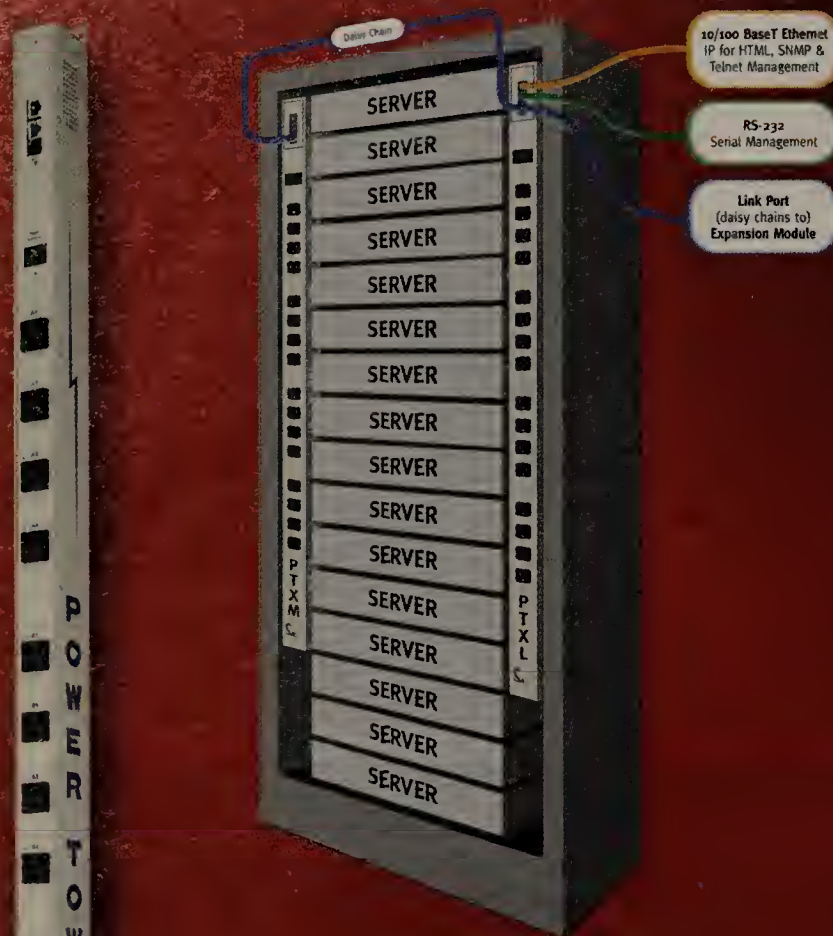


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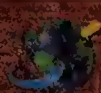
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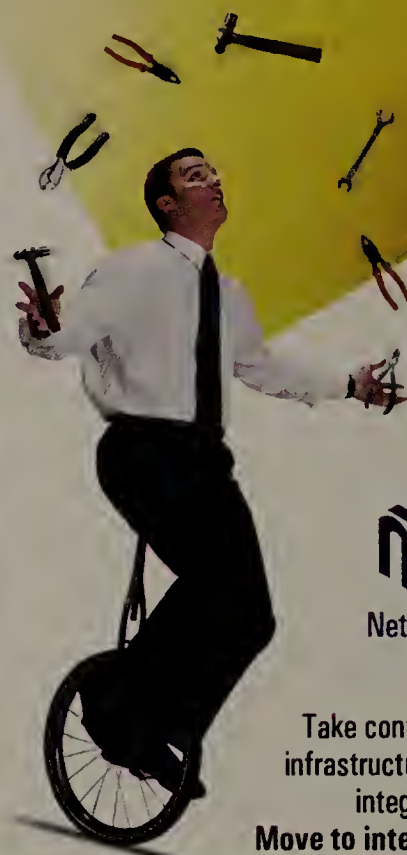
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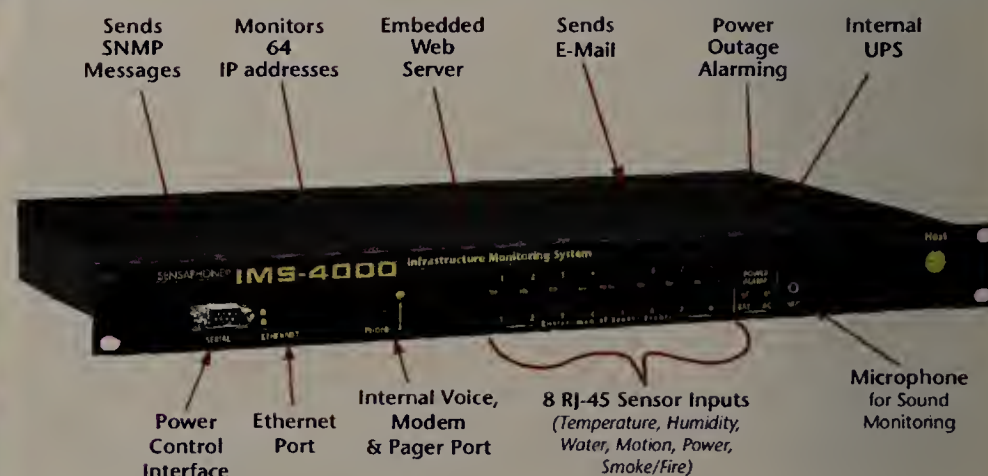
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Tens of thousands of jobs were cut in the financial services sector over the past three years. But the cycle seems to be changing as new investments in technology and an uptick in job postings are replacing news of layoffs.

In two recent reports, Financial Insights and IDC noted increases in financial services IT spending for everyone from Wall Street to community banks. IDC's 2004 report, U.S. IT Spending Forecast Update by Vertical Market, found that IT spending in banking and manufacturing leads all industries for the next four years, the combination of the two accounting for one-third of the \$391 billion to be invested in IT.

Peeling back that investment, Financial Insights looked at the specifics of IT in financial services in three categories – capital markets, corporate banking and retail financial services. In the capital markets category, Financial Insights predicts Wall Street firms will reduce the complexity of data infrastructure and invest in automated systems for trading and credit risk management. The corporate banking category within financial services is expected to invest in profitability management tools, customer e-care, integration of legacy systems and new models in business-to-business

trade services. Retail financial services are expected to increase IT spending by about 4.5% this year to better manage fraud, credit risk and international payment processing and delivery systems.



The investment levels have to be balanced with other trends. While capital markets are expected to reduce the number of IT vendors, reports indicate American Express will continue to heavily outsource IT work (some estimates as high as 70%). Charles Schwab/CyberTrade cut 10,000 jobs during the down cycle but early this month had more than

100 jobs posted. The corporation is looking for information technology experts to help them push forward their strategy of personal investment consulting. Jobs ranging from business analysts to programmers to application developers are posted, along with a plum job as vice president of Schwab Investment Management Technology.

The Charles Schwab story is reiterated across the sector. The American Banking Association's community banking division lists information technology officers as one of the top three most difficult slots to fill, alongside compliance and trust officers. According to Heather McElrath, ABA spokeswoman, community banks are expanding physically with new branches and need to continuously upgrade their online banking capability for customers who want 24 hour per day service. Both require complex IT systems in a niche of financial services that has been slowly building capability over the past four years.

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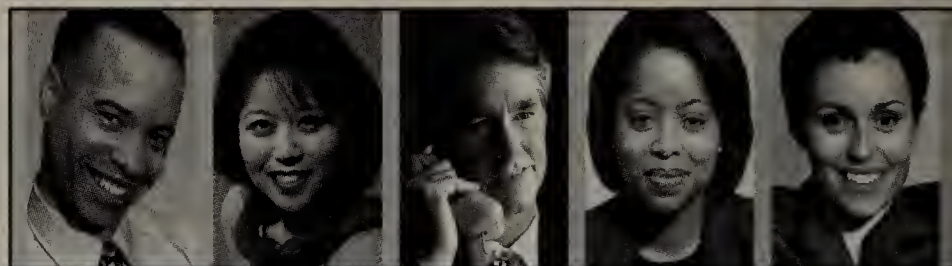
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Editorial Index

A		G	
AOL	84	GigaFast Ethernet	50
APC	52	Grand Central Communications	14
Apple	1	Groove Networks	25
AT&T	14, 37, 53		
Atheros	41	H	
		HP	20, 84
B		Hughes Network Systems	37
Broadcom	41		
		I	
C		IBM	6, 10
Cisco	17, 22	Intel	6
Citrix	41	iPass	37
Conexant	41	Iron Mountain	12
Corvis	37	IronPort	25
		L	
D		Lexmark	50
Dell	22	Linksys	41
D-Link Systems	41		
Documentum	12	M	
		Macromedia	25
E		MCI	53
EarthLink	84	Mercury	14
EMC	10, 82	Microsoft	1, 6, 84, 86
Enterasys Networks	17		
Expertcity	41	N	
Extreme Networks	12	Net6	17
		Netgear	41
F		NetIQ	14
FileNet	12	NetScreen Technologies	8
Foundry Networks	10	Newbury Networks	64
Fujitsu	17, 50		

Nortel	6
Novell	1
O	
Open Text	12
P	
Proofpoint	25
R	
Red Hat	1
S	
SanDisk	50
Silicon Graphics	17
Symbol Technologies	20
T	
Teros	25
T-Mobile	37
Trigo Technologies	82
TruLogica	84
V	
VMware	22
Vonage	41
Y	
Yahoo	84

Advertiser Index

Advertiser	Page #	URL
3Com Corp	40	www.3com.com/wireless
Adtran	23	www.adtran.com/info/whypaymore
AdventNet Inc	74	www.adventnet.com
Airespace	36	www.airespace.com/RE
American Power Conversion	33, 68	www.apc.com
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Continental Computers	75	www.conticomp.com
CrossTec Corp	75	www.CrossTecCorp.com
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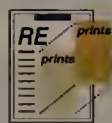
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SYSTEMS SECURITY
ORGANIZATION

EMC

continued from page 10

database, semi-structured e-mail and unstructured file data based on those rules.

This third area — the ability to move data based on rules — is one that EMC still needs to work on, analysts say.

“EMC needs to have some additional storage technologies that tie together their ILM process, almost a policy engine,” says Jarnie Gruener, a senior analyst for The Yankee Group. “Documentum software will provide some of that.”

Documentum says its software is especially good at classifying and managing unstructured data, such as documents generated in Microsoft Word, Adobe or HTML. EMC estimates that up to 80% of data is unstructured.

“We brought capabilities EMC did not have before,” says Documentum CEO Dave DeWalt. “One is called ‘content-awareness. We have the ability to tag and track the life cycle of content. By tagging it, we can determine how long the article will be good for, who can see it and what type of storage it should be saved on.’”

Documentum’s Content Server, Document Control Manager and

other products provide a repository for storing, managing and retrieving documents, scanned images, Web pages and reports based on rules IT administrators set. They also feature access control mechanisms, search, workflow and versioning so data can not only be retrieved quickly but also categorized for movement from one storage device to another. EMC says these products will remain as independent offerings, although the company is evaluating how best to integrate them with its management tools.

To address how to handle the 20% of data that is semi-structured and structured, EMC will point customers to its Legato software, such as ArchiveXtender, DiskXtender, SANXtender and EmailXtender. EMC also has announced a database archiving product, DatabaseXtender, from technology obtained via Outerbay Technologies.

The fifth level of ILM, Goulden says, is more future-oriented.

“If we look a year out, we see an environment where the entire storage system and the servers attached to it will be virtualized,” he says.

“There will be a pool of resources, [and you’ll be able to] dial in your service levels based on the need of the applications,”

Doing it for the margins

EMC President and CEO Joseph Tucci told industry analysts in 2002 that his goal was for the company to have at least 30% of its revenue come from software in 2003. Sure enough, the company did it.

In 2003, software licenses and maintenance represented more than 31% of EMC’s total revenue of \$6.2 billion, contributing to a swing from a \$119 million loss in 2002 to nearly a half-billion-dollar profit in 2003. Revenue from new acquisitions Legato Systems and Documentum accounted for nearly one-quarter of that software revenue, according to EMC.

A big reason for EMC wanting to shift its revenue mix is that software promises higher profit margins, whereas hardware margins are increasingly being squeezed as storage hardware gets less expensive even as it becomes more powerful. EMC doesn’t break out hard-

ware or software margins, but says total gross margins have fallen from 61% in 2000 to 45.6% today. Given that EMC’s revenue mix still is weighted heavily toward hardware sales, it’s clear to see that margins are way off.

Wall Street says software such as EMC’s generally has an 80% to 85% margin. That’s where software specialist Veritas Software’s gross margins fall, for instance.

“Growing enterprise software exposure should enable EMC to further augment growth beyond storage,” says Brent Bracelin, a senior research analyst for Pacific Crest Securities. Bracelin projects that EMC will have software license and maintenance revenue of better than \$2.7 billion this year, which should make EMC the world’s eighth-largest enterprise-software company.

— Deni Connor

he adds.

EMC is working on software for release next year that combines storage virtualization technology the company has been working on with VMware’s server virtualization technology.

“There is networking virtualization, storage virtualization, compute virtualization, and for the customer to have all that start being seamless is a great thing,”

says Diane Greene, president and CEO of VMware.

VMware’s products include VirtualCenter, which is a management interface; VMotion, which lets live servers be moved from one virtual machine host to another; and ESX Server, which allows server partitioning.

From EMC’s standpoint, the top level of ILM consists of integration and management services. Ana-

lysts speculate EMC could look to acquire companies with expertise in this area.

“Services will be a huge component of ILM to help customers assign values to the data and set up their data life-cycle processes, which is a bear to do,” Gruener says.

While EMC’s Documentum, Legato and VMware deals have been its highest-profile software buyouts, the company has snapped up 13 other software vendors over the past five years. Together, they have moved EMC into broader-based competition with companies such as HP, IBM and Veritas Software.

“Until now they’ve competed with these vendors on a set playing field — the storage market,” Gruener says. “Although this is pretty risky for ‘EMC classic’ to undertake, the rewards could be significant — transforming EMC into more of a data center management company that also sells hardware.”

Senior Editor Jennifer Mears contributed to this story.

Foundry extends 10G to the edge

■ BY PHIL HOCHMUTH

Foundry Networks this week is scheduled to announce 10G Ethernet switches that could help companies eliminate bottlenecks between the LAN core and edge, the vendor says.

Foundry’s FastIron Edge Switch (FES) X-Series switches are fixed-configuration wiring closet boxes aimed at helping customers support high-bandwidth applications to desktops. Each box also features dual 10G Ethernet uplink slots, which could be used to connect the switches directly to a core switch and eliminate the need for a network aggregation or distribution layer of switches, Foundry says.

The FES X424 and X448 are 24- and 48-port switches, respectively, with all-copper ports that support 10/100/1000M bit/sec Ethernet. Two slots are included on the front of the boxes for 10G Ethernet optical port inserts.

The 10G ports on both FES X-Series switches use a new type of pluggable fiber-optic transceiver called 10 Gigabit Small Form Factor Pluggable — XFP for short. These transceivers are about half the size of the standard 10G Ethernet Transceiver Package (XENPAK) plug-

gable modules used on most 10G gear. They also consume less power and cost less than XENPAK ports, Foundry says.

Both switches include four Small Form Factor Pluggable fiber-optic ports, which can accept multi-mode or single-mode Gigabit Ethernet over fiber connections.

The Foundry X-Series will compete with Extreme Networks’ Summit 400, a fixed-configuration, 48-port 10/100/1000 switch with dual 10G uplinks, which use XENPAK modules. The 10G ports on Foundry’s X-Series switch, starting at about \$7,000, are priced about \$1,000 less than the price Extreme announced last month at the Summit 400 launch. Extreme and Foundry are the only enterprise switch vendors to announce fixed-configuration 10G switches so far.

The X-Series switches come with what Foundry calls basic Layer 3 features, which include support for Layer 3 quality-of-service protocols, such as Differentiated Services, and security by filtering or controlling traffic via IP addresses.

A software upgrade can make the box a full routing switch, with support for routing protocols such as Open Shortest Path First. These features would be used if an X-Series switch were deployed as an aggregation box to link other lower-speed wiring closet switches, Foundry says. These features also can be used

if the switch is deployed in a data center to connect individual servers or as a server cluster connectivity node.

While some high-end users might be ready to take advantage of the 10G features of the FES X-Series switches, most users probably still will deploy 803.3ad trunking to get logical multiple-Gigabit throughput, such as aggregation switch uplinks, or backbone switch connections, says Chris Kozup, an analyst with Meta Group.

At about \$7,000, the 10G Ethernet ports on the X-Series are a positive sign that the technology is becoming more affordable. “It’s a far cry from \$80,000 per port, which we saw when [10G Ethernet] was first introduced” in 2002, Kozup says.

The FES X424 will be available next month, starting at \$5,500 for 24 10/100/1000 ports. The FES X448, with 48 10/100/1000 ports, is scheduled to be available in June and start at \$8,000. Adding a single 10G Ethernet XFP transceiver to either switch will cost an extra \$4,500, and an additional \$3,000 to \$4,000 for the optical XFP plug-in (depending on whether multi- or single-mode fiber is used). A dual-port transceiver also will be available for \$6,500. All XFPs and optical plug-ins will be shipped next month. Full Layer 3 routing upgrades for the FES X424 and X448 (available in June) will be priced at \$1,500 and \$2,000, respectively. ■



High-Speed LANs

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4:45PM SARAH VISITS DAD'S OFFICE
5:05PM SARAH DOWNLOADS
FUNNYBUNNY.EXE 5:06PM NETWORK
KILLS FUNNYBUNNY 5:14PM DAD
TAKES SARAH TO KARATE PRACTICE

Sometimes threats don't look like threats. They look like your mobile workers, your sales department or your CFO's daughter. Even the innocent act of downloading a file—one that looks like any other, but is in fact corrupt—can create a costly security breach that can take your business off-line for days. So how do you defend against threats that take the shape of productive employees? A network with integrated security can detect and contain potential threats before they become actual ones. Whether they're worms, hackers or even well-meaning humans. Security that's about prevention. Not reaction. To learn more about how Cisco can help plan, design and implement your network security, visit cisco.com/securitynow. **SELF-DEFENDING NETWORKS PROTECT AGAINST HUMAN NATURE.**



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Caffeine

continued from page 1

Robinson resorted to Think-Geek's Shower Shock (200 milligrams of caffeine per shower — twice that of the average cup of coffee) during a near-sleepless period of working long shifts at a tech support center and helping a friend get a Web site online. He's still not quite sure whether to credit the candy or the caffeine in the soap for perking him up, but his attraction to caffeine would seem to make him fit right in to the high-tech industry once his school days are over.

While few still drink Jolt Cola, the beverage that emerged in 1986 with the slogan "twice the caffeine" and played a big part in the romanticized image of developers pulling all-night codefests, caffeine remains a staple of many an IT worker's life. A quick scan of the recycling bin in any office where developers work will likely turn up more than your average collection of empty bottles and cups of Dr. Pepper, Diet Coke, the "energy drink" Red Bull, Arizona's iced Ginseng Tea or Starbucks Frappaccinos. Not only has the range of highly caffeinated beverages expanded, but also a new market of caffeine "accessories" has emerged — from the aforementioned soap to Timmy's Torrid Tonic hot sauce, which blends caffeine with habanero peppers.

An informal poll posted on Network World's Fusion Web site showed of 50 respondents, 55% drink one to four coffees or sodas per day, 32% drink four to eight cups of the beverages daily, 8% drink a whopping nine

servings or more each day, and only 4% don't drink coffee or soda at all.

"We get coffee for free, so all of our developers are hard-core coffee drinkers," says Jason Sosinski, IS security administrator with ARS Service Express, a heating and cooling services company in Houston. "It closely resembles mud most of the time, but it doesn't cost anything so we're happy."

Amazon.com CTO Allan Vermeulen says the company keeps coffee pots brewing around the clock and has "pop" machines scattered about. Plus, being in Seattle, his team can access half-a-dozen coffee shops within 200 feet of the office. But Vermeulen says his philosophy is not to rely too much on caffeine to keep developers going.

"We find giving our developers really cool interesting work, then letting them push themselves to do their best is a much more effective way of keeping them awake than caffeinating them," he says. "I use caffeine as a way to take a break from my computer, so I can come back refreshed."

In part, it's the deadline-driven nature of writing code that has fostered a dependency on caffeine for many, developers say. "When you're sitting in front of a computer screen you want something to drink. And after long hours, a bit of caffeine can get you going again," says Rob "CmdrTaco" Malda, creator and editor of Slashdot.org, a news and resource Web site for developers and engineers.

Even though the computer industry has matured and product development no longer takes on the frenzied pace of the 1980s and '90s, programmers still spend countless hours in front of their screens trying to perfect their code. "Developers are a unique breed: they're under a lot of time pressure to get things done and at times are forced to work long, strange hours. They're put in situations where, in their view, caffeine helps," says Scott Testa, CEO of intranet software company Mindbridge, who is also a developer.

"The salesforce generally can't call someone at 3 a.m. and sell something, where as you can code anytime, anywhere," he says. According to Testa, developers at Mindbridge drink roughly four times the caffeine

Got great ideas?

■ Got an idea for A Wider Net story? An offbeat net-work industry-related topic? A fascinating personality we should profile? Let me know at bbrown@nww.com.

as other employees.

The caffeine-addicted image also helps create an air of irreverence toward corporate norms that many developers embrace and often get away with. "Most programmers are highly independent and highly intelligent," says Harry Weller, a partner with venture capital firm New Enterprise Associates. "They're allowed to wear what they want, do what they want, and even work when they want, but they have to make their deadlines."

As anyone who has experienced a caffeine crash knows, the substance also has its downside. Caffeine stimulates certain neurotransmitters in the brain and increases production of adrenaline, which makes a person more alert, says Dr. Daniel Amen, a psychiatrist and brain-imaging specialist. "It can increase productivity in the short run. The problem is you always pay for it ... it's like giving someone a stimulus: They'll [eventually] crash," he says. "And for someone who is anxious or obsessive, the more [caffeine] they drink ... they can concentrate better on the things that bug them."

Much like surgeons, developers tend to adopt tunnel vision when trying to solve problems, says Dr. Pamela Brill, a psychologist who has worked onsite at technology companies to help computer professionals change behavior patterns. "When you get really focused and have tunnel vision associated with a high level of energy, you become stupid from traveling at such high speeds," she says.

What's important is that developers walk the line between being energized by caffeine and abusing it, Brill adds. "Life is not one size fits all. We each have [our own] tolerance for certain chemicals, and caffeine is one of them," she says. ■



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ISPs slap suits on alleged spammers

■ BY GRANT GROSS

Four major ISPs last week said they are suing more than 220 alleged spammers responsible for sending out hundreds of mil-

lions of unsolicited commercial e-mails.

The six lawsuits, filed by AOL, EarthLink, Microsoft and Yahoo, target the worst spammers using "outlaw tactics," says Mike Callahan, senior vice president and general counsel at Yahoo, which joined with the other three ISPs about a year ago to form an anti-spam alliance. The lawsuits are among the first filed under a new U.S. law called CAN-SPAM (Controlling the Assault of Non-Solicited Pornography and Marketing), which went into effect in January.

The lawsuits name just five individuals and five companies, with at least 215 other defendants as unnamed John Does. The companies say they are confident they can use the expanded law-enforcement tools available under CAN-SPAM to identify the unnamed defendants and shut them down.

The alleged spammers that the lawsuits targeted include those sending advertisements for penis enlargement pills, weight loss supplements, adult-content Web sites and mortgage offers, among other products. The spam identified in the lawsuits allegedly violated one or more sections of the CAN-SPAM law, including false "from" addresses, no physical address in the e-mail and no option to unsubscribe.

Gross is a correspondent with IDG News Services' Washington, D.C. bureau.

HP to snap up user mgmt. firm

■ BY DENISE DUBIE

HP last week announced plans to buy TruLogica for an undisclosed sum and fit its user-provisioning software into the OpenView management portfolio.

TruLogica's software is designed to automate the management of user privileges across multiple systems. HP says the technology will support its utility computing architecture, Adaptive Enterprise, which integrates HP's hardware, software and services to help users quickly respond to changing resource needs. HP competitors Computer Associates, IBM, Microsoft and Sun have laid out plans for utility computing.

HP will sell TruLogica's software separately to start, although HP says customers should expect to see the technology directly integrated with HP OpenView Select Access, an identity management software package, by about midyear. ■

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■ THIS WEEK'S QUESTION:

Which company was formed through the merger of KVM switch makers Apex and Cybex in 2000?

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The End-to-End Networking and Communications Event

BackSpin Mark Gibbs



Hooked on the lowest bidder

Oh get a grip! Come on guys, of course I wasn't serious! How could you not have immediately guessed that that was what I was doing?

You know I don't think the government and its agencies have a clue about communications technology,

so why would I really ever seriously propose to hand it control of Microsoft or encourage it to legislate the design of operating systems (see last week's column at www.nwfusion.com, DocFinder: 1141)?!

From your letters it appears the majority of us (around 60% so far) agree we have a serious problem on our hands. Not only do we all know that our corporate operating-system monoculture is dangerous, but most of us also recognize that we have been willing participants in the creation of it.

But let us be clear. It wasn't that we knew better when we started down this track, and it wasn't that we had a lot of choice. But that period of innocence collapsed like a cheap deck chair.

There was a time when corporate wisdom was that no one got fired for buying IBM. Why? Because you were making a serious strategic decision when you purchased or leased IBM equipment and the company was a serious business partner. This last

point was important because IBM provided real service and had a track record — the decision you were making had legs.

Then along came the PC revolution and the LAN revolution and then the Internet, by which time Microsoft's market dominance had been consolidated as the company made some smart moves, papered over the cracks of its dumber moves and did some really aggressive marketing while all the other vendors stumbled or fell over their own feet.

So today the perceived wisdom is no one gets fired for buying Microsoft — the company has achieved that "old school" veneer of respectability.

But wait! Microsoft did it with cheap products sold to mass markets! These weren't system sells as in the IBM mainframe days or even the Digital minicomputer days — these were stack 'em high and sell 'em cheap building blocks.

By the time we started to realize the consequences it was too late! These weren't systems products, particularly where networking was concerned, and they were built from a vast flotilla of proprietary and de facto standards that sprouted like mushrooms. Using this hodgepodge we built bigger systems than ever!

We all got hooked on cheap and easy PC operating system products and proved that we had about as much true grit available to change our habits as

a crack addict has of turning down a free dime bag.

And despite our growing awareness through the 1990s that we were getting boxed in by Wintel, it wasn't until the Aughts that the idea that this was actually dangerous started to get talked about.

What really got corporate attention was the proliferation of worms and viruses that capitalized on Microsoft software vulnerabilities. And now that we know what Windows source code looks like (see "We are morons," DocFinder: 1142) it confirms our suspicion that Microsoft compromised the (dare I say) sanctity of the operating system code for the benefit of its own applications!

So what we have is a global computing infrastructure built by the lowest bidder that for all its sophistication and fine engineering is based on marketecture and compromises on top of trade-offs founded on hacks and old, old code.

It reminds me of that old quote by astronaut Alan Shepard (quoted by John Glenn): "I was up there looking around, and suddenly I realized I was sitting on top of a rocket built by the lowest bidder."

We have only ourselves to blame and only ourselves to look to for a fix.

Ever heard of the Irish Potato Famine? You will next week ... keep 'em coming to backspin@gibbs.com.



'Net Buzz News, insights, opinions and oddities

By Paul McNamara

They took the whole site

Imitation isn't always the sincerest form of flattery: It can be a crime ...

and a pain in the butt.

Shults Dot Com, a Web site design and hosting outfit in Mission Viejo, Calif., handles the online needs of myriad small businesses and recreational groups. Among the company's sites is that of the Rochester, N.Y., chapter of the Sports Car Club of America, which you can see at www.flr-scca.com.

As of this writing, you also can see almost exactly the same content — page for page, link for link, right down to a photo album and contact info for club officers — at www.carorcar.com. But the latter is an unauthorized copycat site about which neither Shults Dot Com nor the car club had an inkling until they heard about it from me.

The copycat was running a series of banner ads — since apparently stopped — over the car-club content it did not create and does not own. The advertisers — a motley collection of the sort one might normally associate with spam — presumably were compensating the Web site hijackers in some fashion, although exactly how or how much would be anyone's guess.

"We were not aware of this happening," says MaryAnne Curry-Shults of Shults Dot Com. "This company is blatantly stealing our content without conscience or consideration of the copyright infringement."

Shults Dot Com late last week was attempting to contact the operator of the rogue site and its California ISP in an effort to get the matter resolved. According to the notoriously unreliable Whois directory, the phony site is registered to someone in China (a few of the links on the thing appear to this monolingual columnist to be written in Chinese).

"As far as legal action, we shall have to see if it really gets that far," Curry-Shults says.

The good news is that it probably won't get that far. These characters look to be of the hit-and-run variety, as they first targeted another auto-related site called Car Enthusiast, according to the British online news outlet silicon.com. That car site's owner apparently succeeded in chasing off the bad actors with a few legal threats. My guess would be that Shults Dot Com soon will be free of them as well.

"I'm appalled at the way some will abuse the Internet," Curry-Shults says. "I guess I'm just naive to the fact that people will do anything to make a buck no matter how unethical."

Suing spammers is good sport, but ...

Headlines are sure to follow whenever corporate giants such as AOL, EarthLink, Microsoft and Yahoo unleash a small pack of lawyers on a big pack of spammers. You saw this happen last week.

Much less certain is whether the ultimate goal — reducing overall levels of spam — is in any way a realistic expectation from such an adventure.

If history is any guide, that result is not likely. Lawsuits against spammers have been commonplace for years now, yet there is precious little evidence that they have done anything to stem the tide.

The companies behind this most recent crop of lawsuits say this time will be different in part because they have the nation's new CAN-SPAM law at their disposal.

Anything that makes a spammer's life miserable — and less profitable — is well worth a few billable hours.

But it still strikes me as stomping cockroaches with your shoe: Sure, you'll squish a few of the buggers, but so what?

No need to send a card or bake a cake, but I thought you might want to know that my authorship of 'Net Buzz reached the five-year mark earlier this month. Time does fly ... But the address remains the same: buzz@nww.com.

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